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Notes on Lead Smelting in Nevada and Utah.

By O. H. HAHN, M. E.

(CONTINUED FROM PAGE 324.)

LET me now proceed to explain the construction of the improved blast-furnaces for smelting lead ores, which have been found to work with great economy and regularity.

The annexed sketches show the construction of such a furnace.

The longitudinal section (Fig. 1) is made along the line H Y, in Fig. 2; and the cross section (Fig. 2) is along the line T V, in Fig. 1. A is the shaft of the furnace, B the chimney, C the hearth, D the foundation, E the bottom stone, *a* the dam-plate, *a* and *b* hearth-plates of cast-iron, *c* cast-iron pillars on which the flange *d* rests, *e* dam, *f* fore-hearth lying outside of the furnace, *g* bridge, *h* tymp-stone or front made of clay, *i* breast, *k* slag-spout, *l* matt-spout or iron-spout, *m* syphon-tap, *n* tap-hole, *o* lead-well.

p, p^1, p^2, etc. tuyeres through which the blast enters the furnace.

q nozzles (made of galvanized iron).

r windbags (of leather or canvass.)

s induction-pipe.

t charging-door or feed-hole.

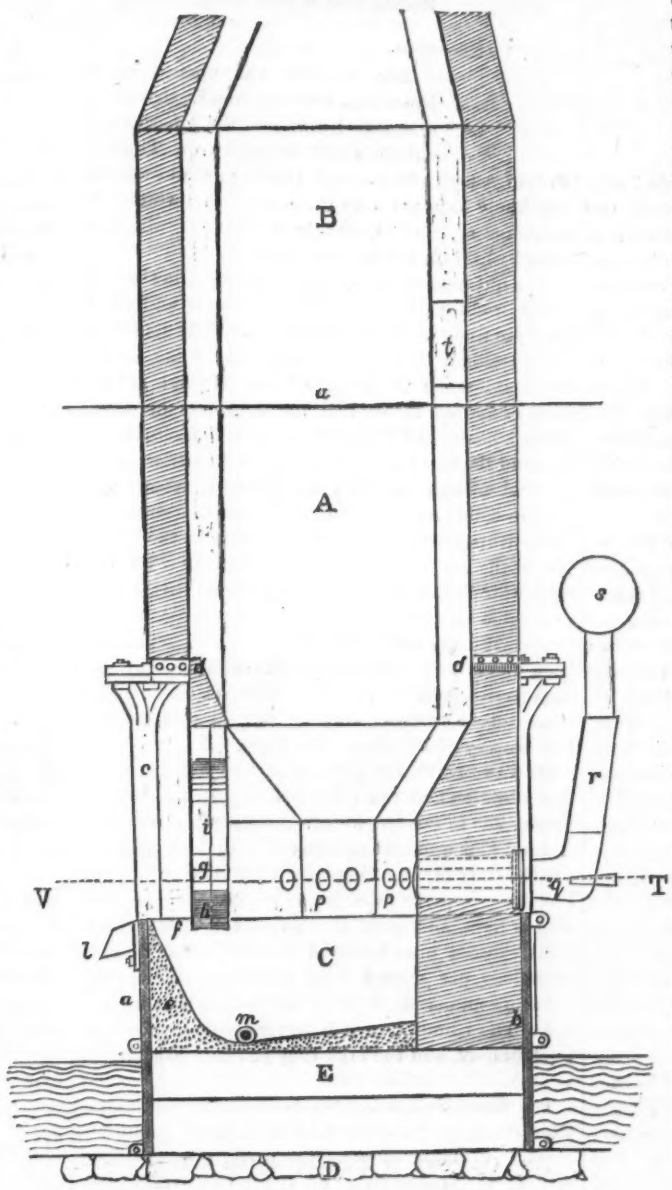
u throat.

The wall in which the breast lies is called the frontwall, the one opposite to this the back-wall, the adjoining ones the sidewalls.

This furnace is called an *open-breasted one*. In foreign coun ve also furnaces with a *closed breast* o fore-hearth, and only leaving an opening for the exit of the slag. Such furnaces are termed *crucible furnaces*. Notwithstanding the many advantages they have over the open-breasted ones they do not permit the detaching of accretions in the furnace and are therefore not suited for our purposes. Furnaces like the one described in Vol. X. No. 12 of the ENGINEERING AND MINING JOURNAL are provided with from 3 to 5 tuyeres according to the diameters of their mouths or muzzles. The masonwork, especially the lower part, is strongly bound together by 1½ in. tie-rods of wrought-iron laid in the outer walls. Each pair of them, lying in the same vertical plane, passes through a wooden or better a cast-iron, brace which is screwed tight to the wall. In general the old style furnaces have an oblong rectangular cross section. Aiming at a higher production essential improvements have been recently made in blast-furnaces by altering their shape, and introducing more compressed air through an increased number of tuyeres. By the introduction of a larger amount of air a more perfect combustion of the fuel, and hence a more rapid fusion is obtained. In regard to the shape two principles have come into notice, viz.

1, That of the Russian general RASCHETTE who gives his furnaces a rectangular cross-section, and the form of an inverted truncated pyramid with four sides. He places his numerous tuyeres in the long sides of the furnace in such a manner that the currents of air pass by each other. (Example, the Phenix furnace, Eureka.)

2, That of *Pilz*, a Freiberg official. His furnaces have a six-sided, octagonal or circular section, and the shape of an inverted truncated pyramid or cone. His numerous tuyeres are placed radially round the furnace-centre omitting the breast only. (Example, BUEL & BATEMAN'S furnace, Little Cottonwood; Utah Co.'s and Winamuck Co.'s furnace, Bingham Cañon; Richmond furnace, Eureka, Nev.).



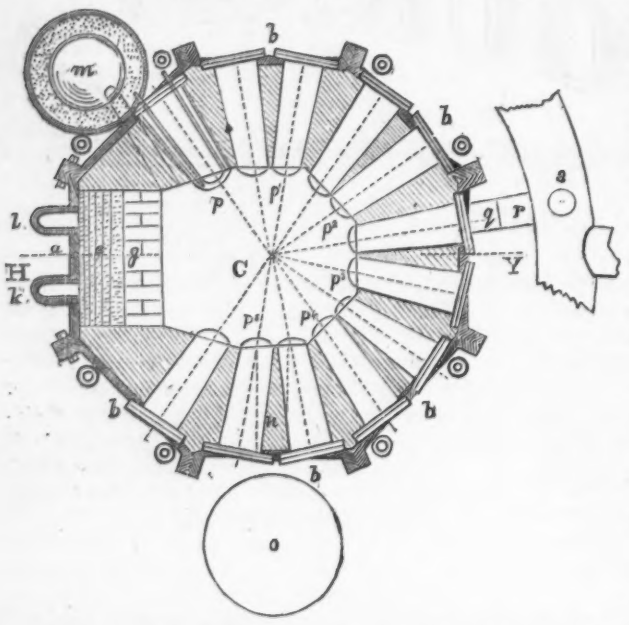
A MODERN LEAD FURNACE.

Both principles may be reduced to one general one: *a widening of the furnace towards the top, and a great number of tuyeres.* By these circumstances a great saving in fuel and a larger production have been attained. The volatilization, mechanical as well sa chemical, has also been notably decreased. The air comes out with less speed at the the top, and the ore fuses at a lower point of the furnace, thereby giving the lead-fumes a chance to condense again. Quite recently experience has taught that a combination of the Raschette with the Pilz principle is the most advantageous one. Last spring two new furnaces were built at the works of the Eureka Consolidated Co.'s. In order to test the merits of the Pilz furnace Mr. ARENTS constructed one furnace in accordance with his own notions; viz. with elongated hearth, 3 ft. wide by 4½ ft. deep, and 6½ ft. diameter at the top and provided with 10 tuyeres, 4 on each side and 2 in the back-wall; the other one was a Pilz, 4 ft. diameter in the hearth, 6½ ft. at the top with 12 tuyeres placed radially round the centre. Both furnaces were 10ft. high from tuyeres to feed hole and worked admirably, though it was found that the altered Pilz worked from 1-5 to 1-4 more ore, under the same circumstances, than the original Pilz. Although these experiments may not have been conclusive, the government officials at the Hartz mountains in Prussia have been led to a construction similar to the one adopted by ARENTS. Their circular furnaces are 20 in. wide and 3½ ft. deep in the hearth, and 5 ft. diameter at the top, and have 7 tuyeres. They are said to be superior to the original Raschette and Pilz furnaces. The proportion of the hearth-area to the throat-area can be accepted as 1 to 2½.

The height of shaft-furnaces ranges from 8 to 20 ft. above the centre of the tuyeres. Low furnaces are necessary for basic ores, especially such as carry a great deal of oxide of iron (White Pine District), to prevent the reduction of metallic iron. High furnaces are of good service for refractory ores, e. g., argillaceous or quartzose ores, (Bingham Cañon); and where a bisilicate slag is desired. In high furnaces a higher temperature is attained with a less amount of fuel than in the low ones. But a low furnace is easier manipulated when deranged than a high one. Where the character of the ores changes frequently a low furnace is preferable. The standard height in this country is 10 ft. above the centre of the tuyeres. On the top of the furnace is an iron or better brick smoke-stack, high and wide enough to carry off the fumes.

The manner of charging or feeding is of import ance, as it affects the working of a furnace materially. Furnaces of small dimensions generally have a feed hole a few inches above the throat on that side of the furnace directly opposite the front wall. The proper proportion of fuel, either by measurement or weight is introduced first, and on the top of that the ore which may be scattered all over the area of the furnace, leaving an empty space only at the front wall (Jackson & Roslin furnaces, Eureka; Salt Lake

Valley, Stockton, &c.) More capacious furnaces require 2 feed-holes, which are situated at nearly right angles to the breast, *i. e.*, in the side walls (Eureka C. Co.'s and Utah S. Co.'s new furnaces). The ore is not spread over the area of the throat, but charged round the tuyere walls, leaving a core of coal in the centre.



To ensure regularity in charging, the throat of a furnace is frequently provided with a funnel, the opening of which can be kept closed by a sheet iron box let down from the top while charging. As soon as it is time to charge the furnace, this box is raised by means of a counterpoised lever and the charge drops down. After emptying the funnel, the box is lowered again. This arrangement at the same time protects the workman from noxious vapors. Where no condensation chambers are used, this box runs out into a pipe, which is moveable in the stationary smokestack (Richmond furnace, Buel & Bateman's furnaces). We will have occasion hereafter to speak more fully about charging.

The number of tuyeres and the manner of placing them is really not of so great consequence as is generally assumed, if the proper quantity of air is introduced into the furnace and divided well in the hearth. The majority of smelters in this country place the tuyeres only six inches above the level of the slag spout, and point them downwards. This tends to concentrate the heat too far below, volatilizing much metal. Placing the tuyeres too high above the slag-hole is entirely wrong. Before the tuyeres the furnace-temperature is highest. There the separation of the metal from matte and slag takes place, which separate themselves according to their specific gravity. Below the tuyeres the temperature decreases again. Now, if we place our tuyeres too high, the molten masses will stiffen and even solidify at the lower points. I have seen a furnace in White Pine where the tuyeres were three feet or more above the slag-hole. The consequence was a congealing of the fused masses in the hearth and entire clogging up of the furnace. The most correct way is to place them horizontally and on the same level, about 10 inches above the slag-spout (Eureka Cons. Co.'s and Phenix Co.'s works). All vertical dimensions are understood to be measured from the centre of the tuyeres. For every 1½ square foot of area a tuyere of 2 inch muzzle is calculated.

Since the introduction of cast-iron or wrought-iron tuyeres cooled by water, the working capacity of lead-smelting furnaces has been greatly increased. Formerly only sheet-iron and even clay ones were in use, giving rise to much inconvenience. In order to protect the furnace-walls from the influence of the reverberated heat the tuyere had to be provided with a nozzle of clay, or a very acid slag, protruding into the furnace. But, to keep this nozzle of a certain length, and to prevent it from growing or melting off, it had to be constantly watched by attentive and experienced men. During the last century an attempt was made on the Hartz mountains to increase the production by constructing a large-sized furnace with 14 tuyeres. It failed on account of the difficulty to keep the tuyere walls from burning out. Even the first Raschette furnace, built in 1864, on the Hartz, was provided with sheet-iron tuyeres. But they had to be replaced so often—which always necessitates a stoppage—that it was found expedient to try water-tuyeres, which indeed gave entire satisfaction. The best ones in use in this country are wrought iron ones of the Keyes patent.

The lowest point of the hearth is from 36 to 40 inches below the centre of tuyeres, the latter figure being the maximum. If made deeper the lead might get too cold.

[TO BE CONTINUED.]

Polytechnic Association of the American Institute.

Meeting held at their Rooms, Nov. 16, 1871.

The President (Prof. S. D. TILLMAN) in the chair.

THE meeting was opened by the President, with the notice that as the scientific lectures of the American Institute, which are given on Thursday evenings, are to be illustrated upon a grand scale, and are likely to prove very interesting this winter, the meetings of the Polytechnic Association will hereafter be held on Friday evenings.

The question of producing light by allowing the flame produced by a mixture of coal-gas and air to impinge upon platinum sponge was briefly discussed, the President again announcing his views on the cause of light in the flame of gas. He did not believe in the old theory that the light was due to the intense heating of the particles of carbon. Bearing in mind the fact that light is due to vibrations of the etherial medium, and that uncombined carbon exists only in solid form, he thought that the first operation in a burning flame would be the union of the hydrogen of the gas with the oxygen of the air. The carbon, which existed in the gas combined with hydrogen, must now become solid, for it will be uncombined with any other substance. The solid carbon then unites with oxygen to form carbonic acid, and thus passes back to the gaseous state. The vibrations caused by this change of condition of the carbon are so rapid as to produce light.

Dr. VAN DER WEYDE pointed out the fact that when the vibrations of the ether are rapid enough to be perceptible to the eye, we call the phenomenon light. At least four hundred millions of millions (400,000,000,000,000) of vibrations per second, striking the eye, are necessary in order to produce the impression of light, and until the number of these vibrations exceeds nine hundred millions of millions of vibrations per second light is visible. When they are more numerous, light is not perceptible to the eye. The vibrations are, however, made manifest in photography, and the rays they produce are known as chemical or actinic rays.

The fluorescent solutions were briefly discussed, after which the President read the following note :

TIME OCCUPIED IN PERCEPTION AND EXPRESSION.—Mr. T. C. Mendenhall, of Columbus, Ohio, has given, in *The American Journal of Science and Arts*, an account of experiments made by him to determine the time required to communicate impressions to the sensorium, and to receive a response to such impressions. His plan of proceeding does not differ essentially from that first used by American astronomers in determining what is technically called the personal equation. Time is measured by means of an ordinary register, similar to the astronomical chronograph, in which a strip of paper is moved with great regularity at the rate of about one inch and a half per second, the seconds being registered upon this slip by means of a seconds' pendulum in the electric method. The person on whom the experiment is made is seated at a table, having his hand on a key, by pressing which with his finger the circuit is completed, and the time of this action is registered upon the moving band of paper. An apparatus is attached by means of which the circuit is completed for an instant, at the moment that there appears at a circular opening—about three-fourths of an inch in diameter—a card, red or white, which completely fills the opening. The subject is instructed to watch this opening, and to close the circuit by pressing for a moment the key immediately on seeing the card. The actual appearance of the card and his closing the circuit in response are registered upon the band of paper by two dots, separated by an interval approximating perhaps to one-fifth of an inch. By carefully measuring this interval and comparing it with the registered second, an expression is obtained for the time occupied by the somewhat complex operation of his perceiving the object and acting in response to that perception. Many devices were used for varying the conditions of the experiment with each subject. With different persons as many as 2,000 individual trials were made, and the errors of experiment eliminated, as far as possible, by the method of averages. Below is a table of the reduced results in one case, in which each number is the mean of the results of from forty to eighty trials:—

CASE OF A. G. F.	*Time in Seconds.*
Response to appearance of a white card	0·292
Response to appearance of electric spark	·203
Response to a sound	·158
Response to a touch on the forehead	·107
Response to a touch on the hand	·117
Response when deciding between white and red	·443
Response when deciding between circle and triangle	·494
Response when deciding between tones C and E	·335
Response when deciding between tones C and C above	.438

The most remarkable fact shown by Mr. Mendenhall's experiments is that perception is quicker through the ear than through the eye.

Dr. RICHARDS—The sense of hearing seems to be more rapid than the sense of sight. And if the body producing the sound was not very near the ear, the time occupied by the sound in reaching the ear must be taken into account.

Dr. VAN DER WEYDE—The sound would move two feet in 1-550th of a second; so that that would not make much difference.

Mr. PARTRIDGE—Probably the persons were directed to look at the opening. In order to see a motion we should not look directly towards the body which is to move, but near it. The persistence of the impression is greatest in that portion on which falls the image of the object which we are looking directly at. The persistence of the impression on the retina adds to the time required to perceive the change.

Dr. J. V. C. SMITH—It may be well to explain a little of the anatomy of these organs, that it may be understood more clearly why the mind receives impressions more quickly through the ear than through the eye. Light traverses space at the rate of nearly 200,000 miles per second; but yet an impression remains a considerable time upon the retina before the mind is cognizant of it. Sound moves only about 1,100 feet in a second; yet the acoustic apparatus is such that the mind is reached more quickly through the ear than through the eye. The ear is so constructed that any disturbance in the air is conducted in whirls and concentrated upon a drum-head. On the opposite side of the drum-head there is a little bone attached to the drum, and between that and the interior part of the ear are four small bones: one looking like a hammer, another like an anvil, and one, called the *stapes*, resembling a stirrup; and these bones constitute a compound lever increasing the motion produced by the vibration of the drum-head, and carrying it to the sack in which the acoustic nerve is placed.

We see one object with two eyes, because the two images fall on exactly corresponding parts of the two retinas. If we press upon the eye, so that the images do not fall on corresponding parts, we see two images. It is probably a matter of education to learn to see one object with both eyes. I am satisfied that infants in the cradle do not see very distinctly. The fluid of the aqueous humor is so turbid that i is like looking through ground glass. And the same is the case with young birds, puppies and all young

animals. By-and-by this is absorbed, and a purer fluid takes its place, and they see more distinctly. This fluid is secreted with great rapidity. A man in Amsterdam, 200 years ago, had great success in curing the blind. A cataract is simply an opacity in the crystalline lens. By pricking the eye, he allowed the fluid to escape, and its place was soon supplied with a more transparent fluid. This man, not being a doctor, was called upon to operate upon a dog, and thrown into prison with the promise that when the dog could see again he should be released. The next morning the lens had filled up with new fluid, and the dog could see.

Dr. RICHARDS remarked that people often become blind in one eye or deaf in one ear without knowing it.

Dr. BRADLEY—I apprehend that persons suffering from strabismus, or cross-eyes, always see double.

Dr. SMITH—Cross-eyed people see with both eyes, but much more strongly with one of them. In the case of the chameleon, the two eyes are entirely independent of each other, and they seem to distinctly apprehend two objects at the same time. I do not know whether the mind can think of two things at once, but the chameleon seems to have that power.

Dr. VAN DER WEYDE—I think most birds see with one eye in one direction, and with the other eye in the other direction. In pressing upon the eye, at first we see double; but if we continue the pressure we cease to see double, and then removing the pressure again we see double. People who have strabismus do not see double, for they see with one eye. Strabismus can be cured, especially in children, without any operation at all, by merely strengthening the weaker eye, and accustoming it to look. Notice which eye is used, and cover that eye, forcing the child to look with the other. On uncovering the eye, for a time it will be found that the eyes will move together. By a frequent repetition of this covering of the stronger eye, strabismus can be completely cured.

Dr. BRADLEY—It is not always the case in strabismus that one eye is defective. Sometimes the person can look equally well with the two eyes, and looks first with one, and then with the other.

Dr. EDMUNDS—Ordinarily we look with both eyes; or we could not have stereoscopic views.

Mr. FISHER—Artists learn to look at objects as a whole, and not merely at the separate parts.

The PRESIDENT In playing a new piece of music, in eight parts, the performer must read every note separately, and must do this in a small fraction of a second.

Dr. VAN DER WEYDE—It is not necessary to read every note. There are rules of harmony and melody; and by giving a glance at it, the musician can divine the rest.

Dr. EDWARDS—He must see every note with his mind, which comes to the same thing.

Dr. VAN DER WEYDE—He only needs to look in most cases at the upper and lower note; and that will show all that is between. A good musician will not make mistakes in that way.

The PRESIDENT—Suppose there are accidentals.

Dr. VAN DER WYDE—He knows when there should be accidentals; and if they are omitted he plays them, knowing that the omission is a mistake. The number of chords is limited; and it is that which makes it possible to play operatic scores so easily.

The PRESIDENT—How the mind perceives so much at once we do not yet know. But it reminds me of the process of telegraphing the handwriting or a picture, by passing a pointer over the sheet containing the writing, the circuit being completed every time it crosses the writing.

Dr. RICHARDS—I have heard nothing said to-night upon the mode of expression after perception. Good readers see half a line or more before they read it, committing it to memory as they proceed. The difficulty seems to me as great in the expression of the perception as in the perception itself.

Dr. VAN DER WEYDE—A good illustration of that, is in playing music at sight. The musician must read a good deal in advance. In difficult music, 20 or 30 notes to the second; it would be impossible to execute it, if every note had to be looked at. But the musician has practised all possible combinations, and when he sees a certain combination he executes it. We don't look at every letter when we read a newspaper.

Dr. BRADLEY—I know a case where a person gradually moving the eye down a printed page, without moving it from left to right, can see and comprehend and remember the contents of the page.

Dr. PARMLEE—Probably one man in every five reads his newspaper in just that way. It is the only way now that a man can keep posted up.

Dr. EDWARDS—You must analyze as well as generalize. A letter expresses an idea, and if you do not read every letter as you go, you cannot get the sense.

When we look at a complicated vista, the eye at once takes that in; but to understand it, you must go through every detail; if you break a link in the chain, it is gone. The rapidity of the action does not destroy it So with double vision. It is there; and the rapidity of putting the two things together does not destroy the duality.

Mr. PARTRIDGE—In superimposing the image seen with a telescope upon a number of lines seen by the naked eye, to ascertain its magnifying power, there is distinct vision, and you are doing something with each eye at the same time.

Dr. VAN DER WEYDE—It requires some training to do that. When we see the words "American Institute," we do not look at every letter. If we did, and there was an error we should always see it. The proof-reader looks at every letter: but I do not read like a proof-reader.

The PRESIDENT—We do a great deal by association, we look at a word and see a certain part of it, and know what the word is. There are two ways of learning a thing by heart. One is to learn the idea, and the other by exercising the organ of locality, remembering the first word on a page, for instance, and from that recalling the rest of the page. The best way is to learn by actual association with the idea itself.

Dr. SMITH cited the case of LAURA BRIDGEMAN, who was deaf, dumb, and blind, and yet had been tolerably well educated through the ends of her fingers. When CHARLES DICKENS was in South Boston, visiting the Institution, she was saying something to her instructress, who, on being asked what it was, said she was asking if horses loved butter. The case of JULIA BRACE, also deaf dumb and blind, educated at Hartford, was also a remarkable case of education under great difficulty. JULIA BRACE could put a small cambric needle on her tongue, and the end of a thread, and instantly thread the needle with her tongue.

Dr. EDWARDS—When we know how the blind fish see, we shall learn something about it. We are only at the beginning. We shall learn by and by that the blind do see, and the deaf do hear.

Dr. RICHARDS stated that the appreciation of LAURA BRIDGEMAN of the conditions of society, was illustrated by the fact that during the Irish famine she went to work and earned money and bought a barrel of flour and sent it to the Irish.

The PRESIDENT—It is worthy of notice that everything that can enter the mind can be described by a dot or a line;—by the Morse telegraph.

Dr. SMITH—All this time we have been talking about the organs, and have not talked about the mind. There is a presiding archon that receives the intelligence; and we suppose it is lodged in the brain. We know that we are duplicated throughout, two eyes, two hands, two halves of the nose, and so we have two brains. But we have a great many brains. There is the great solar plexus, for instance, behind the stomach. But we have a class of beings with no brain at all, which act with as much discretion as a man. The spider has no brain at all; and I have watched them as they worked. I have discovered that they are right-handed, working better with the right hand than with the left. It was certainly acting with reference to the attainment of an end, when they have tried the different cords of their web to see which was slack, and then mended that which was broken.

The PRESIDENT—It may be questioned whether the action of the spider is not the result of the education of a great many spiders as predecessors; whether their instinct is not really the education of all their progenitors.

Dr. RICHARDS—The brain is only one large ganglion or congeries of ganglia, similar to the little ganglia that are scattered all over the body. It is not necessary that the functions of the brain should be confined to one organ in all animals.

The PRESIDENT—The skull itself is only an expansion of the upper joint of the back-bone.

Dr. VAN DER WEYDE—A spider has brains. Agassiz ascribes brains even to the oyster. A spider has eyes, and therefore an optic nerve. Where does the optic nerve go to, if not to the brain?

PLANTS KILLED BY FROST.—Prof. GŒPPERT, of Breslau, has satisfactorily shown that in certain cases plants die in freezing and not in thawing. The white flowers of some orchids change in color upon a chemical reaction which takes place on the death of the parts. When crushed, or when the vitality of the cells is in any way destroyed, they turn blue immediately. Cold may produce a similar result. These flowers turn blue at once on freezing showing that life has departed.

Dr. PARMLEE inquired what was the cause of the action of the sensitive plant.

Dr. VAN DER WEYDE—On the back of the leaf is an organ of brown color, which contracts when it is shaken, causing the leaf to close. If that is cut off, the plant is no longer sensitive.

Dr. EDWARDS—It is not one plant alone that is sensitive. Every plant follows out its own nature as much as the sensitive plant, and there is as much motion in one as in another. That of the sensitive plant is more apparent, but they are all equally wonderful when we observe them.

ON THE DESCENT OF GLACIERS.—HENRY MOSELEY, Canon of Bristol, continues in the *Philosophical Magazine* for August the discussion on the cause of the descent of glaciers. He opposes the generally received theory, the object of his various memoirs being to show, 1st, the mechanical impossibility of the descent of glaciers by their weight alone; 2d, the actual cause of their descent to be their dilatation and contraction by alterations of temperature, in addition to their weight.

Adjourned to Friday next, at half-past 7 o'clock P. M.

About Town Jottings.

DEPARTMENT OF DOCKS.—Last June, work was begun upon the river front of North River which, when completed, will give to New York the finest wharfage in the world, namely, the building of a wall one hundred and eighty-four feet from the present frontage, and increasing West street to a width of two hundred and fifty feet. Operations were commenced four hundred and sixty-five feet south of Pier No. 1, and the dredging machines having completed their work as far as the pier, they have been hauled off until next spring, by which time the piers above will have been cleared away, the wall being laid will be finished and the work can proceed.

The wall now being laid is nineteen feet six inches at the base, and narrows to six feet in a total height of thirty-two feet above the base, which is formed of rip-rap stone, laid on the solid foundation of the river bed (found at the extreme southern point at the depth of fifty feet, and at the northern, thirty-two feet), within two feet of the river bottom. This is covered one foot with small stone, over which is spread one foot of concrete, the sides formed and the top levelled off by a system of guide-planks, attached to piles driven at intervals along either side of the wall.

The result of the labors of the season may be briefly summed up as follows: Forty thousand square yards of mud removed, its place partially supplied

with 15,000 square yards of rip-rap stone, mosto f covered with its topping of small stone, about one-third of the foundation covered with concrete, forty feet of stone work on the main wall laid. Experience demonstrates that the work cannot be prosecuted to advantage with less than 1,500 feet opened at once, and it is now probable that the plans will be so changed before Spring as to allow the Commissioners to remove from three to four piers at a time, as occasion requires.

On Thanksgiving Day, November 30, at Union, N. J., a large-sized "American Submerged Pump," worked by six men, will be tested in competition with two hand fire engines, manned by sixty men, one from Hoboken and one from West Hoboken, and the manufacturers, the Bridgeport Manufacturing Company are confident of bearing off the palm.

Burch's Helical Hand Drill is a novel affair, dispensing with both pawl and ratchet, employing simply a helical brake. It is noiseless in its action, the lever cannot slip, and its simplicity of construction makes a large reduction in the price as compared with other drills. They are just being introduced into the market by C. F. Mudge, 55 Chambers street. It has been tested for three years in a large machine shop at Gloucester, Mass.

The Taconic, Terranovan and Cambrian Systems.

We have already shown that Dr. Sterry Hunt distinguishes three series of crystalline rocks, where other geologists have made but two, before the commencement of the New York system, in the Potsdam sandstone. It should be added that he admits another series, between his Terranovan or White Mountain rocks and the Champlain division—namely, the equivalent of the lower Cambrian of the English geologists, in the form of certain unaltered fossiliferous sediments, observed in New Brunswick and eastern Massachusetts, but not yet found on the western side of the Appalachian ranges. Rogers and Safford have acknowledged several series in the Southern States, below the Potsdam, but they are (somewhat arbitrarily, we think) held to belong to the Champlain division.

What, then, is new in Dr. Hunt's classification? His Laurentian is everybody's Laurentian geognostically, though Credner, following some earlier American geologists, has given it greater area geographically; his Green Mountain series is Huronian; his Terranovan series is post-Huronian and pre-Cambrian; his lower Cambrian occupies the chronological, though by no means the geographical, position of the strictly Taconic of Emmons. The real novelty would be the assertion—which he does not venture positively to make—that the White Mountain or Terranovan series is superposed upon the Green Mountain rocks, and hence of later age. If this Terranovan wedge had not been driven in between the Green Mountain series and the lower Silurian, we should have continued, with the Canada survey, to count the former as part of the latter, and probably we should not have found any room for an American Cambrian.

It is difficult to say what would become of Dr. Hunt's whole theory of cycles in sedimentation, successive formation of various crystalline schists without igneous metamorphosis, and chronological deductions from lithological data generally, if his conclusion as to the age of the White Mountain rocks should be overthrown by stratigraphical evidence. He has knit together so closely his web of analysis and probabilities that it seems likely to endure or fail as a whole.

Emmons asserted the existence below the Potsdam sandstone of fossiliferous sediments, which he called Taconic. This view was vehemently assailed, the palaeontological evidence was successfully overthrown (so far as New York and New England rocks were concerned), and the stratigraphical evidence was successfully muddled, and has never since been thoroughly cleared up. Yet Emmons was certainly right in many respects. The pre-Silurian rocks of the South are now acknowledged, though crowded into the Silurian, under Potsdam; and the pre-Silurian fossiliferous strata have been recognized in Wales, Scandinavia, Newfoundland, New Brunswick and eastern Massachusetts. Abroad, they are called Cambrian, and their godfather, Sedgwick, had to fight the Silurianists for a foothold, much as Emmons did in this country.

Dr. Hunt rejects the name Taconic in favor of the earlier name Cambrian. At the same time he denies the appearance of known Taconic rocks—*i. e.*, of unaltered fossiliferous sediments older than Potsdam—*on the western base of the Appalachians in Canada or New England.* But he admits the Cambrian strata in the East, and says they or their equivalents may yet be found in some part of the Appalachian region. Fragments of green and black slates in quartzose conglomerate at the base of the Potsdam do indicate, as he pointed out in 1861, "the existence of argillaceous slates before the deposition of the Potsdam sandstone."

The *crystalline* schists, sometimes classed as Taconic. Dr. Hunt refers to the Huronian, or else (if we understand him) to his own Terranovan series. His position appears to be, therefore, that a Taconic system, including both crystalline and unaltered sediments, has no *raison d'être;* that the former rocks belong with the supra-Laurentian schists, and the latter with the Cambrian, which has now acquired a zoological individuality. This is precisely the position held at one time by Emmons, who called his Taconic strata lower Cambrian, until Murchison dogmatically abolished the latter title. Meanwhile, it should be added, the Cambrian reaches with its upper limb a good way into the Champlain division, and threatens to engorge that foundation dear to New York geologists, the Potsdam sandstone itself.

This classification, as held by Dr. Hunt, is an attempt to apply a lithological test in a chronological argument. The stratigraphical evidence is, to say the least, by no means decisive; palæontological there is practically none, in the crystalline strata; hence the field is clear for the identification of rocks by mineralogical and textural features. A new series is promulgated on the strength of its friability, superior micaceosity, schistosity, and concretionary graniticity—characters possessed also by the series from which it is distinguished, but in less degree—and on the strength of the occurrence of certain subordinate mineral species. We confess to a distrust of lithological evidence in such cases. Dr. Hunt's greater confidence in it is traceable to his theory of the genesis of crystalline rocks, which rejects, to a great extent, the ordinary notions of metamorphosis, and holds to the direct formation of eozoic crystalline schists by chemical precipitation or immediate reaction. If this view be accepted, it is evident that in strata to which it applies, leading minerals become as good landmarks as leading fossils.

Dr. Hunt quotes approvingly the dictum of Delesse, a quarter of a century ago: "Rocks of the same age have most generally the same chemical and minerological composition, and reciprocally, rocks having the same chemical composition and the same minerals, associated in the same manner, are of the same age." This maxim we unhesitatingly disapprove. It is contradicted by the only certain evidence we can obtain—namely, the evidence of the processes of rock-formation now going on; and it seems to us equally repugnant to reason.

Nor do we think Dr. Hunt's last ingenious argument a successful vindication of the availability of lithological evidence for the classification of rocks as to their age. His three series can be "traced" too far to be considered as really traced at all, just as his theory of crystalline genesis is too sweeping in its results to be accepted upon the evidence hitherto adduced in its behalf. The chemical facts vouched for by so distinguished an investigator may be accepted without question; but the wide inferences drawn from them may be challenged, even by those who sincerely admire their author. Patient accumulation of stratigraphical evidence will solve the vexed problem of New England geology—or it will remain unsolved. As for the sweeping chemico-cosmico-geological generalizations in which Credner, Hunt, and many other eminent geologists are indulging, we venture to say that there never was a less propitious time for them. A new volume of evidence, vast in extent and novel in contents, is opened in our western domain, and such men as Whitney, Newberry, King, and Hayden are making its revelations known. As Dr. Hunt wisely remarks, "The progress of these investigations will doubtless lead us to modify many of the views now accepted in science"—and we may add, many of the views now proposed. Without meaning to commit the error of premature theorizing, we may safely say that the "advanced" modern views of volcanism and metamorphism are among those which will have to be modified. Every observer is more or less affected through the imagination, by the facts which he meets most frequently and studies most intimately. Doubtless this may be one explanation of the circumstance that we (in common with most geologists of the Pacific slope) retain a faith in volcanoes, eruptive rocks and igneous metamorphism, which has not yet been quenched out of us by the cold-water school, nor leached out of us by the warm-water school, nor precipitated out of us by the precipitated school. Let the court wait a little longer, till our evidence is put into the case.

The Viaduct Railway.

So little has been said or written, of late, about the solution of the great problem of rapid metropolitan transit, that the idea has gained ground that the directors of the New York Railway Company had abandoned the idea of attempting the execution of the work which they undertook. We are pleased, therefore, to learn from a letter from Mr. William Butler Duncan that the Board of Directors is to be completely reorganized, so as to command public confidence in the scheme, and that the completion of the work will be the first business of the reorganized direction.

Whether the original idea of building a viaduct and placing the tracks upon it will be adhered to is a minor consideration. The people sorely need some more rapid means of getting from one end of the island to the other, and they do not wish to see the existing plans allowed to die out, without the substitution of others.

Mr. Duncan says in his letter that he has for years been interested in various schemes for rapid transit, and that he took a great interest in the Viaduct road because it had the strong support of the city authorities, without which he did not believe any scheme likely to prove successful.

When the Board of Directors, which contains the names of some of the most respectable men in our city, shall have had erased from it the names of men who have been prominently before the public in connection with the frauds of the Tammany ring, we may reasonably look for a healthy progress in the prosecution of the work entrusted to it.

The *Aldine* has issued in advance its number for January 1872, containing the usual interesting literary miscellany, and exquisite illustrations. The gems of the number in the way of wood-engravings, are Evanville Perkins's "Tropic Forest;" a charming full page picture after Darley—"The Nooning;" and an effective figure, "Maud Müller," drawn by Georgie A. Davis. The publisher's programme for 1872 is very attractive. Mr. R. H. Stoddard is to edit the paper,—a guaranty that its literary character will be worthy of its faultless typography and superb artistic illustrations. It was scarcely necessary to add as an inducement to subscribers, the bonus of a chromo-lithograph—"Dame Nature's School," from the painting of Seis.

THE COAL TRADE.

B. B. WESTERN, COAL EDITOR.

Anthracite Coals.

NEW YORK, Nov. 24, 1871.

WHOLESALE.—Affairs seem to grow no better. The indifference we noted last week, in regard to what turn matters would take, remains undisturbed. The demand is only up to about one-fourth of the supply, and at prices that are not remunerative. There is a little Schuylkill Coal continually received, which is sacrificed at great loss. The whole trade seems to be entirely blocked, even to such an extent that private parties are shipping coal East, trusting in its sale before the time of its arrival at the point of destination. This, of course, demoralizes trade greatly, and creates much dissatisfaction. There seems to be no remedy for the fix we are in, and we can only wait for matters to work out their own salvation. We learn that most of the collieries in Schuylkill county are already stepped: that the wharves at Port Richmond are groaning under the immense quantities of coal piled upon them, and that the road is blocked up with cars filled with unsold coal, which is, of course, on demurrage. Mr. GOWEN refuses to reduce tolls, and even if he did, it would cause heavy losses on that coal which has been previously brought down at the old rates. Lehigh Coal in this market is beginning to feel the pressure, and with the exception of Lump, which is always in good demand, prices are some 50 to 75 cents off circular rates.

The action of the Pennsylvania Coal Company and Delaware and Hudson Canal Company in offering coal at retail in this city at $5 25 for Broken and Egg, and $5 75 for Stove in yard, has totally demoralized the city trade. No dealer can buy any kind of coal to compete with these rates, and even if they did, there is no guarantee but that the companies would further reduce prices, to run them out of the trade. These large companies mean to hold the city trade, and they certainly have a most effectual way of doing it. This is, of course, to the benefit of the working and poor class, and this is the best feature of the low prices. The principal topic of conversation in trade circles is the 96th Scranton Sale, advertised in our columns this week, to take place on Wednesday next, 29th inst. 100,000 tons are offered, and the general opinion seems to be that prices will go lower on all sizes, but particularly on Stove. We have been under the impression that the trade would rally before this sale, but now we give up all hope. The prices realized will probably be the same as those obtained in November, 1870, viz.: Lump, $3 48; Steamer, $3 61; Grate, $3 77; Egg, $3 98; Stove, $4 53; Chestnut, $3 50. This sale, it will be remembered, was the one that created the great strike which lasted far into the spring. What effect it will have this year remains to be seen. We can merely reiterate what we have stated during the past two weeks, that the only remedy for the difficulty is a stoppage at the mines or a curtailment of the production. The Pennsylvania Coal Company issued their circular *to contractors* on the 20th inst., at the following rates:

	PRICES FOR DEC.	PRICES FOR NOV.
Lump	$4 50	$5 10
Steamer	4 50	5 10
Grate	4 60	5 30
Egg	4 70	5 40
Stove	5 00	5 90
Chestnut	4 40	5 10

We are yet some 1,500,000 tons behind in supply of Anthracite Coals compared with last year. This makes the mystery greater why the demand should be so light and the prices so low.

RETAIL.—For reasons which are noted above in regard to the low prices of the Company Coals, the balance of trade is thrown in their favor. Trade is brisk at $5 25 for Broken and Egg, $5 75 for Stove, in yard.

FREIGHTS.—Vessels are becoming very scarce, many boats being laid up for the winter, others going South and to the West Indies. We quote New Haven, $1 10; Hartford, $2 00; Boston, $2 30; Portland, $2 00.

Bituminous Coal Trade, 1870 and 1871.

The following table exhibits the quantity of Bituminous Coal passing over the following routes of Transportation for the week ending Nov. 18, 1871, compared with week ending Nov. 19, 1870.

COMPANIES.	1870.		1871.	
	Week.	Year.	Week.	Year.
C. & O. Canal	17,614	494,761	15,375	629,708
B. & O. R. R.	22,022	769,808	23,585	1,096,342
H. & B. T. R. R.	6 447	276,460	5,569	285,447
Harrisburg & D.	12,253	669,808	16,931	714,533
*L. V. R. R.	....	12,213	3,021	352,480
P. & N.Y.C. & R. Co.	4,382	233,009	....	....
Cumberl'd Branch Canal	2,970	83 516	5,403	185,348
" Railroad	2 630	108,101	1,178	61,797
Total	68,318	2,647,676	71,062	3,326,653
			68,318	2,647,676
Increase.			2,744	678,979

The tonnage of the P. & N. Y. C. & R. R. Co. is included in that of the L. V. R.R. Co

Anthracite Coal Trade for 1870 and 1871.

The following table exhibits the quantity of Anthracite Coal passing over the following routes of transportation for the week ending Nov. 18, 1871, compared with week ending Nov. 19, 1870.

COMPANIES.	1870. WEEK.	1870. TOTAL.	1871. WEEK.	1871. TOTAL.
*Phila & Reading R.R.	84,756	2,835,693	84 511	3,522,163
Schuylkill Canal	31,284	514,855	29,362	965 903
Lehigh Valley R. R.	52,845	2,734,380	64,521	2,115,082
Lehigh & Sus. R. R.	24,474	913,000	35,090	1,133,489
Lehigh Canal	27,930	733.569	22.691	692,934
Scranton North	10,451	646.133	16,999	491,827
" South	44,927	1,601,557	42,556	1,075,714
Penn. Coal Co., rail	22,137	1,025,212	26,572	672,914
" " canal	476	16,295	....	13,962
Del. & Hud. Canal Co.	35,239	1,292,567	40.825	954,412
" " East	14,171	391,457	7,181	299 928
" " West	2,788	74.535	3,078	103,072
South	5,889	405,116	9,212	291,559
Shamokin	10,540	436,613	13,035	572,934
Trevorton	....	67.371	....	....
Lykens Valley Coal Co.	2,930	64,558	2,301	85,036
Wyoming South	....	305,855	....	....
Wyoming North	....	....	....	4,167
P. N. Y. C. & R. R. Co.	5,565	268.257	....	104,987
Williamstown Col'y	7,120	271,957	....	....
Big Lick Col	3,024	95,110	3,373	132,438
Total	386,246	14 684.290	400,137	13,232,523
1870		13,232,523	386,246	
Decrease		1,451,767		
Increase			13,891	

* Less coal transported for Co's use and Bituminous coal.

Schuylkill Canal.

Report of coal transported over the Schuylkill Canal for the week ending Saturday, Nov. 18, 1871.

	Tons. Cwt.
From Port Carbon	— —
" Pottsville	— —
" Schuylkill Haven	27,427 08
" Port Clinton	1,935 00
Total for week	29.362 08
Previously this year	936,541 06
Total	965,903 14
To same time last year	514,855 01

Philadelphia and Reading R. R.

Amount of coal transported on the Philadelphia and Reading Railroad during the week ending Saturday, Nov. 11, 1871:

	tons. cwt.
From St. Clair	45,490 05
" Port Carbon	5,014 11
" Pottsville	873 16
" Schuylkill Haven	6,198 09
" Auburn	8,958 09
" Port Clinton	17,773 05
" Allentown and Alburtis	232 01
" Harrisburgh and Dauphin	16,931 01
Total paying freight	101,471 17
Coal for Company's use	4,439 07
Total for week	105,911 04
Previously this year	4,212,517 19
Total	4,318,429 03
To same time last year	3,594,233 02

Report of Coal Transported over Central R.R. of N. J. (Lehigh and Sus. Div.)

Week ending Nov. 18—Compared with same time last year.

WHERE SHIPPED FROM	WEEK 1871., tons ct	WEEK 1870. tons ct.	YEAR 1871 tons cwt.	YEAR 1870. tons. cwt
Wyoming Region	32197 01	30987 15	1151713 05	1115733 04
Upper Lehigh Region	3973 00	3524 12	90049 03	135989 14
Beaver Meadow Region				
Hazleton Region	6533 03	8988 07	197651 05	296748 09
Mahanoy Region				
Treskow Region	3122 04		69541 09	
Mauch Chunk Region	8932 14	3438 07	200380 00	106069 15
Totals	54758 02	46939 01	1709338 02	1654541 02
Increase	7819 01		54797 00	
Decrease				
DISTRIBUTION.				
Forwarded East of Mch Chunk by Rail	35090 07	24474 05	1139488 10	913000 04
Forwarded East of Mch Chunk by Canal	14476 04	16899 06	397236 11	497813 08
Delivered at and above Mauch Chunk	1608 19	1453 06	59744 15	40738 17
Delivered to L. & B. R. R. at Plymouth Bridge	3225 16	3406 13	91206 01	180114 07
L. V. R. R at Packer'n	356 16	705 11	27662 05	22868 06
Totals	54758 02	46939 01	1709338 02	1654541 02
Of the above there was transported on acc'tn of L. C. & I. Co.	13091 04	6082 01	297732 08	148043 05
W.-B. C. & I. Co.	19787 13	18372 11	767543 12	550418 01
Totals	32878 17	24454 12	1065276 00	698491 06
Increase	8424 05		366784 14	
Decrease				

Lehigh Coal and Navigation Company,

Report of Coal transported over the Lehigh Canal and L. & S. Div. of Central Railroad of New Jersey for the week ending Nov. 18, 1871, and for the year 1871.

	WEEK.	YEAR.
Forwarded East of Mauch Chunk by Rail	35,090	1,133,488
Delivered at and above do.,	1,608	59,744
Forwarded East of do., by Canal	22,691	692,934
	59,390	1,886,167
Corresponding period last year—		
Forwarded East of Mauch Chunk by Rail	24,474	913,000
Delivered at and above do.,	1,453	40,738
Forwarded East of do., by Canal	27,929	733,569
	53,857	1,687,308
Increase on Railroad	10,616	220,488
Decrease " "		
Increase on Canal		
Decrease " "	5,238	40,635
Of the above there was transported on account of—		
Lehigh Coal Nav. Co	19,401	545,718
Wilkesbarre Coal & Iron Co	19,787	767,543
	39,189	1,313,261
Corresponding period last year—		
Lehigh Coal Nav. Co	12,663	246 239
Wilkesbarre Coal & Iron Co	18,372	550,448
	31,035	796,687
Increase	8,153	516,573

Philadelphia & Reading Railroad and Branches.

COAL TONNAGE

For the Week ending Saturday, November 18, 1871.

BY RAILROAD.—ANTHRACITE.

PASSING OVER MAIN LINE AND LEB. VAL. BRANCH.

	Tons. Cwt.
From St. Clair	45,490 05
" Port Carbon	5,014 11
" Pottsville	873 16
" Schuylkill Haven	6,198 09
" Pine Grove	5,836 12
" Tamaqua	17,773 05
" Harrisburg	
" Dauphin	5,821 12
Total	87,008 10

FOR SHIPMENT BY CANAL.

Passing Frackville Scales	14,586 09
" Mill Creek "	1,940 13
" Schuylkill Valley Scales	1,436 08
" Mt. Carbon "	388 19
" Cressona "	7,130 13
" Pine Grove "	
" Tamaqua "	1,527 01
Total	27,010 03

SHIPPED WESTWARD VIA NORTHERN CENTRAL RAILROAD.

Passing Locust Gap	1.214 05
" Shamokin	4,657 03
" Herndon	.....
Total	5,871 08

SHIPPED WEST OR SOUTH FROM PINE GROVE.

Via Schuylkill & Susquehanna R. R.	1,650 02
" Lebanon & Pine Grove Branch	1,176 03
Total	2,826 05

CONSUMED ON LATERALS.

From Frackville Scales	644 09
" Mill Creek "	683 10
" Schuylkill Valley Scales	167 06
" Mt. Carbon "	532 09
" Cressona "	540 05
" Pine Grove "	280 16
" Tamaqua "	456 05
Total	3,305 00

LEHIGH AND WYOMING COAL.

Received via Allentown, E. Penn'a Br.	175 06
" " Alburtis, "	56 15
" " Oreland, G. & N. Br.	926 02
" " Connecting R. R.	.....
" " Willow Street R. R.	171 01
Total	1,329 04

BITUMINOUS.

From Harrisburg	11,109 09
" Connecting R. R., G. & N. Br.	
" Junction R. R.	180 03
Total	11,289 12

COAL FOR COMPANY'S USE.

Anthracite	4 054 18
Bituminous	385 10
Total.	4,440 08

RECAPITULATION

	Total for Week.	Corresponding week last Year.	
Passing over Main Line and Leb. Val Branch	87.008 10	85,543 09	i 1,465 01
For Shipment by Canal	27,010 03	26,719 19	i 290 04
Shipped Westward via Northern Central R. R.	5,871 08	4,454 19	i 1,416 09
Shipped West or South from Pine Grove	2,826 05	1,855 11	i 970 14
Consumed on Laterals	3,305 00	4,019 08	d 714 08
Lehigh and Wyoming Coal	1,329 04	165 02	i 1,164 02
Total Anthracite paying fr'gt	127,350 10	124.758 08	i 4.592 02
Bituminous	11,289 12	8,922 19	i 2.366 13
Total of all kinds paying fr'gt	138,640 02	131,681 07	i 6,958 15
Coal for Company's use	4,440 08	3,348 13	i 1,091 15
Total Tonnage for Week	143.080 10	135,030 00	i 8,050 10
Since Dec. 1, 1870	5541199 18	4302032 18	i1279167 00
Total to date	5724280 08	4437062 18	i1287217 10

SHIPPED BY CANAL.

	Total for Week.	Corresponding week last Year.	
From Schuylkill Haven	27,427 08	28,317 00	d 889 12
" Port Clinton	1,935 00	1,348 00	i 587 00
Total Tonnage per Week	29,362 08	29,665 00	d 302 12
Since Dec. 1, 1870	936 541 06	489.795 01	i 446746 05
Total to date	965,903 14	519,460 01	i 446443 13

Shamokin Coal Trade.

For week ending November 18, 1871	13,035 09
Same time last year	10 539 14
Increase	2,495 15
Decrease	
Total amount shipped to date	572.933 13
Same time last year	436.612 13
Increase	136,321 00
Decrease	

Pennsylvania Coal Company.

Shipments of Pittston Coal for the week ending Nov. 18, 1871.

	1871. WEEK.	1871. YEAR.	1870. WEEK.	1870. YEAR.
By Railway	26,571 12	672,918 01	22,137 08	1,025.212 02
" Canal	.....	13,962 04	475 15	16,495 08
Total	26,511 12	686,820 05	22,613 03	1,041,707 10
Decrease 1871, 354,827 05				

Huntington and Broad Top R. R. Co.

For week ending Nov. 18, 1871	5,569 tons.
Same time last year	6,447 "
Increase	878
Decrease	.... "
Total amount shipped to date	285,447 "
Same time last year	276,460 "
Increase	8,987 "
Decrease	

Delaware Lackawanna & Western Rail Road Company.

Coal transported on the Delaware, Lackawanna and Western R. R. for week ending Nov. 18, 1871.

	Week. Tons. Cwt.	Year. Tons. Cwt.
Shipped North	15,998 14	491,827 02
Shipped South	42,556 09	1,075,714 09
Total	58,555 03	1,567,541 11
For the corresponding time last year:		
Shipped North	10,459 16	646,132 16
Shipped South	44,926 10	1,601,556 11
Total	55,377 06	2,247,689 07
Increase	3,177 17	
Decrease		680,147 16

Delaware and Hudson Canal Company.

Coal mined and forwarded by the Delaware and Hudson Canal Company for the week ending Saturday, Nov. 18, 1871.

	WEEK.	SEASON.
North	54,501 13	1,389,489 03
South	9,212 10	291,558 14
Total	63,714 03	1,681,047 17
Corresponding time in 1870:		
North	34,721 11	1,878,871 06
South	5,589 15	405,115 17
Total	40,311 06	2,283,987 03
Increase North	19,780 02	
Decrease North		489,382 03
Increase South	3,622 15	
Decrease South		113,557 03
Total increase 1871	23,402 17	
Total decrease 1871		602,939 06

Delaware and Hudson Canal Company.

The following is a statement of Coal Transpo ted by the Delaware and Hudson Canal Co. for the week ending Nov. 18, 1871.

	FOR THE WEEK.	FOR THE SEASON.
By Delaware and Hudson Canal,	40,625	954,412
By Railroad, East	7,181	299,928
" " West	3,078	103,072
" " South	9,212	291,559
Total Tons	60,096	1,648,971

For the same period last year.

	FOR THE WEEK.	FOR THE SEASON.
By Delaware and Hudson Canal,	35,239	1,292,567
By Railroad, East	14,171	391,457
" " West	2,788	74,535
" " South	5,589	405,116
Total Tons	57,787	2,163,675

Report of Coal Transported over Lehigh Valley Railroad

Report of coal tonnage for week ending Nov. 18, 1871, previously this season, compared with same time last year:

WHERE SHIPPED FROM.	WEEK. Tons. Cwt.	TOTAL Tons. Cwt.
Total Wyoming	15,456 01	546,233 15
" Hazleton	43,941 13	1,254,132 15
" Upper Lehigh	80 10	2,259 17
" Beaver Meadow	14,571 04	453,929 03
" Mahanoy	10,383 01	481,152 17
" Mauch Chunk	103 11	7,852 08
" Sullivan & Erie	777 15	7,548 19
Total Anthracite	85,653 15	2,755,089 14
Bituminous Coal from all sources	3,021 06	352,480 08
Total by rail and canal	88,675 01	3,107,570 02
Same time last year	73,233 19	3,515,481 09
Increase	15,441 12	
Decrease		407,911 07
Forwarded East from Mauch Chunk by rail	64,520 11	2,115,082 02
Same time last year	52,845 04	2,734,380 05
Increase	10,675 07	
Decrease		619,298 03

RECAPITULATION.

Forwarded East from Mauch Chunk by rail	64,520 11	2,115,082 02
To N. C. R. R., at Mount Carmel	2,602 17	4,765 19
Forwarded North from L. & B. Junction		295,852 09
To L. & S. R. R. at Packerton for rail	316 04	6,933 00
Delivered at Mauch Chunk	45 11	1,287 18
Delivered on line of road above Mauch Chunk	720 15	11,691 17
Delivered above Mauch Chunk for use of L. V. R. R.	1,040 17	48,501 03
To L. & S. R. R., at Penn Hav., for railroad		94 10
Do. for canal	6,143 01	196 942 07
At M. Chunk for canal	3,264 09	73,935 09
Total Anthracite	85,653 15	2,755,089 14
Bituminous Coal	3,021 06	352,480 08
Total all kinds	88,675 01	3,107,570 02

This report includes all Bituminous Coal carried over the Lehigh Valley and P. & N. Y. Railroads from December 1st, 1870, to date.

Statement of Coal Transported over Cumberland and Pennsylvania Railroad

During the week ending Saturday Nov. 18, and during the year 1871, compared with the corresponding period of 1870.

WEEK.

	To C. & O. Canal Tons. Cwt.	To B. & O. R. R. C. Tons. Cwt.	Total. Tons. Cwt.
1871	15,374 15	23,585 00	38,959 15
1870	17,614 06	22,021 14	39,635 00
Increase		1,563 06	
Decrease	2,239 11		676 05

YEAR.

1871	629,707 14	1,096,342 09	1,726,050 03
1870	494,760 12	769,8.7 17	1,264,668 09
Increase	134,947 02	326,534 12	461,481 14
Decrease			

Cumberland Branch

WEEK.

	To C. & O. Canal. Tons. Cwt.	To P. & O. R. R. Co Tons. Cwt.	Total. Tons. Cwt.
1871	5,403 09	1,178 04	6,681 13
1870	2,969 13	2,630 09	5,600 02
Increase	2,433 16		981 11
Decrease		1,452 05	

YEAR.

1871	185 347 11	62,797 03	248,144 14
1870	83,515 19	108,101 05	191,617 04
Increase	101,831 12		56,527 10
Decrease		45,304 02	

Company Coals.

Nov, 1871.

	L.	Str.	Gra.	Eg.	Sto.	Chest
*Scranton at E. Port	— —	— —	— —	— —	— —	— —
*Pittston at Newburgh	5 10	5 10	5 30	5 40	5 80	5 10
*Lackawana at Rond't	5 10	5 10	5 30	5 60	5 95	5 10
Wilk'b're at Hoboken	4 00	4 25	5 00	5 00	6 00	4 75
Old Co. Lehigh at Pt. John's	5 75	—	5 75	5 75	6 25	5 50
Lehigh at Eliz. Port	5 75	—	5 75	5 75	6 25	8 50

For freights to different points see "Freights."
* To contractors.
* None to sell.

Line Prices for Coal Nov, 1871,

	Lump	Broken	Egg	Stove	Ches'.
At Mauch Chunk	4.00	4.00	4.00	4.25	3.00
" Wilkesbarre	3 75	3.75	3.75	4.00	3.00

Prices of Coal by the Cargo.

[CORRECTED WEEKLY.]

	AT NEW YORK. Nov. 1. R. A.	W. A.	AT PHILADELPHIA. Nov. 1. R. A.	W. A.
SCHUYLKILL.				
Lump	$—	$—	— —	— —
Steamer	4 80	— —	— —	4 50
Broken	4 80	— —	— —	— —
Egg	— —	— —	5 00	4 75
Stove	6 25	— —	5 00	5 00
Chestnut	5 00	— —	— —	— —
Pea	— —	— —	— —	— —
LEHIGH.				
Lump, (along side)	6 25	——	— —	— —
Broken	6 25	— —	— —	— —
Egg	6 25	— —	— —	— —
Stove	6 25	— —	— —	— —
Chestnut	5 25	— —	— —	— —
Pea	— —	— —	— —	— —
SPECIAL COALS.*				
Diamond Vein	R. A. 6 00@6 25		— —	— —
New England	" —		— —	— —
Locust Mountain	W. A. 6 50		— —	— —
Honey Brook, Le'h	W. A. 5 50@6 25		— —	— —
Spring Mountain	" " 5 50@6 25		— —	— —
Sugar Creek	" " 5 50@6 25		— —	— —
Sugar Loaf	" " 5 50@6 25		— —	— —
Old Comp'y's	" " 5 50@6 25		— —	— —
Cross Creek	" " 5 50@6 25		— —	— —
Room Run	" 5 50@6 25		— —	— —
Girardville	" " —		— —	— —
McMichael	" " — —		— —	— —
Shamokin	" " 5 25		— —	— —
Lykens Valley	" " 5 75		— —	— —
Broad Top	" " 5 25		— —	— —
Hill & Harris	" " — —		— —	— —
Henry Clay	" " — —		— —	— —
Powelton	" 5 25		— —	— —

*Dealers in these coals may be found in our advertising columns.

Prices at Baltimore—Nov, 1871.

Wholesale Prices to Trade.

Wilkesbarre, by cargo or car load	$5 60@5 85
Pittston and Plymouth, do	— —@5 60
Shamokin Red or White Ash, do	— —@5 60
Lykens Valley Red Ash, do	— —@6 30
Zerba Valley	— —@— —
Trevorton	— —@— —
By retail, all kinds per ton of 2240 lbs.	7 00@8 25
Georges Creek & Cumberland f. o. b. at Locust Point for cargoes	— —@4 75
Fairmount and Clarksburg gas, f. o. b. at L. Point	6 00@6 50
BITUMINOUS COALS.	
Kittaning Coal Co.'s Phœnix Vein, f. o. b. at Phila	$ —
Lemon " " "	—
Cumberland Vein Coal	—
Consolidation Coal Co.'s on board N. Y.	6 75
Maryland Coal Co. " "	6 75

Prices at Georget'n, D.C., & Alexandria, Va.

Nov, 1871.

George's Creek and Cumberland f. o. b. for shipping...$4 35@4 05

Prices at Havre de Grace, Md.

Wilkesbarre and other White Ash for cargoes	$5 25@5 50
Lykens Valley	6 25@6 50
Shamokin Red or White Ash	5 50@5 75
Trevorton and Zerba Valley	— —@—

Prices of Gas Coals.

Nov, 1871.

PROVINCIAL.

Corrected weekly by Louis J. Belloni, Jr., 41-43 Pine st., N. Y
Duty, $1 25, gold

	Coarse	Slack.
Block House	$1 75 @-1 75	
Gowrie	1 75 @-1 75	

Corrected by Bird, Perkins & Job, 86 South street.

	Coarse.	Culm of Coal
Pictou	$2 25	@1 25
Sydney	2 25	@- 80
Lingan	1 60	@- 80
Little Glace Bay	1 60	@1 00
Caledonia	1 60	@- 80

A discount from the prices of the coarse Coal on purchase of 5000 tons and upwards. Duty $1 25 per ton, gold, on the coarse coal. 25 per cent. ad valorem on the Culm of Coal.

AMERICAN.

	Currency.
Westmoreland	$7 00 @- —
Fairmount Gas Coal Co. of N. Y.	7 00 @- —
Despard Coal Co.	7 00 @- —
Penn	7 00 @- —
Newburg Orrel Gas	— — @- —
West Fairmount Gas Coal	7 00 @- —
AT PHILADELPHIA.	
Powelton	$6 75
TO NEW YORK.	
Provincial.	
Sidney	$3 25
Lingan	3 25
Cow Bay	3 37½
Port Caledonia	3 37½
Little Glace Bay	3 25

Prices of Foreign Coals.

Oct, 1871.

Duty $1 25 per ton.

Corrected weekly by PARMELE BROS., No 32 Pine street, N. Y.

Liverpool Gas Caking	$ 8 00@— —
" Cannel	10 50@12 00
" House "	— —@16 00
" Orrel	12 00@14 00

Per ton 2,240 lbs., ex-ship.

PRICES FROM YARD.

Liverpool House Orrel, screened	$16 00@17 50
"Cannel, "	18 00@20 00

Per ton 2,000 lbs. delivered.

Freights.—Dec. 1871,

TO EASTERN PORTS.	Cumberland. From Georgetown.	Cumberland. From Baltimore.	Anthracite. From Philadel'a.	Anthracite. From East Port, Port Johnston, and Hoboken.	Anthracite. From Newburg	Anthracite. From Rondout
Amesbury			$2 50	$1 95		
Bangor	$2 75		2 25	2 00		
Bath	2 75	2 65	2 35	— —		
Boston	2 60	2 60	2 25	1 85	180	1 85
Bridgeport	2 25	2 30		1 10	1 10	1 25
Bristol		2 60		1 50		1 50
Cambridgeport			2 35	1 85		
Derby				1 25		
Dighton	2 30	2 35		— —		
East Cambridge				2 25		
Fall River	2 25	2 30		1 40	1 40	
Hackensack				140		
Hartford	2 75	3 00	2 40	2 00		
Jersey City		2 60		55	70	
Middletown				1 25		
Mystic				1 25		
New Bedford	2 60	2 35	2 00	1 50		
Newburyport	2 75			2 00		
New Haven	2 25	2 30		1 10	1 10	
New London	2 25	2 30	1 95	1 25		
Newport				1 40		
New York	2 00	1 90	1 40	55	70	
Norwalk		2 30		1 10	1 10	
Norwich	2 25	2 30		1 50	1 40	
Pawtucket	2 60	2 50	2 15	1 06		
Portland	2 50	2 60	2 40	1 70		
Portsmouth, N. H	2 75	2 75		2 50		
Providence	2 25	2 30	2 00	1 50	1 50	
Rockport						
Saco	2 75		2 65	— —		
Sag Harbor				1 20		
Salem	2 60	2 65	2 25	2 25		
Stamford				1 10	1 10	
Stonington				1 25	1 20	
Taunton				2 00		
Warren			— —	1 00		
Washington			1 25			
TO RIVER PORTS.						
Albany		80			55	
Catskill		70			50	
Cocksackie		70			50	
Coeyman's		70			65	
Cold Spring	2 20	70			30	
Fishkill		70	1 60		30	
Haverstraw					60	
Hudson	2 20	2 25			40	
New York					60	
Nyack			1 75		30	
Poughkeepsie					30	
Rhinebeck						
Rondout					75	
Saugerties			1 60		40	
Sing Sing					75	
Stuyvesant					75	
Tarrytown					75	
Troy					55	
West Point			1 75			
Yonkers					60	

Rates of Transportation to Tide Water.

BY RAILROAD.

TO PORT RICHMOND, PHILADELPHIA.

Philadelphia and Reading Railroad, from Schuylkill Haven for consumption	$2 10
For reshipment	2 00

MAUCH CHUNK TO ELIZABETHPORT.

L. V. Railroad from Mauch Chunk to Phillipsburgh	$0 92
C. R. R., N. J., Phillipsburgh to Elizabethport	1 88
Shipping expenses at Elizabethport	25
Wharfage	10
Total	$2 15

MAUCH CHUNK TO PORT JOHNSON.

L. V. R.R., or L. & S. R.R. from M. C. to Phillipsb'g	$0 92
C. R. R., of N. J., Phillipsburgh to Pt. Johnson	1 88
Shipping expenses	25
Wharfage	10
Total	$2 15

TO HOBOKEN.

L. V. R. R., Mauch Chunk to Phillipsburgh	$ 92
Morris & Essex R. R. Phillipsburgh to Hoboken	1 88
Slipping expenses	20
Wharfage	16
Total	$2 15

TO SOUTH AMBOY.

L. V. R. R.	92
R. & D. R. R. and Cam. & Am R. R.	1 81
Shipping Expenses	35
Total	$2 08

PENN HAVEN TO ELIZABETHPORT.

L. V. R R Penn Haven to Phillipsburgh	90
C. RR. of N. J. Phillipsburgh to Elizabethport	126
Shipping expenses	25
Wharfage	10
Total	$ 2 51

BY CANAL.

Via Schuylkill Canal.

TO PHILADELPHIA.

From Schuylkill Haven	Toll $1.35	Freight	95c	$2 30
" Port Carbon				
" Port Clinton	" 1.88	"	55c	2 23

Drawback 15 cents during August.

NEW YORK.

From Schuylkill Haven Toll 1 10 Freight $2 00 $3 10

The Rates of Toll on Lump and Steamer Coal will be ten per cent less than the above rates. The charge will be per ton of 2240 lbs. No charge less than Forty Cents per ton will be made for any distance. A drawback of thirty cents is allowed

on all coal passing Fairmount Locks used at Philadelphia and vicinity.

Via Lehigh Canal.

TO PHILADELPHIA

Lehigh Canal	$ 80
Freight and towage	1 10
Total	$1 90

TO NEW YORK.

Lehigh Canal	$1 57
Morris Canal	..
Freight	..
Towing	202
Total	$2 6

TO JERSEY CITY.

Lehigh Canal	$ 44
Morris Canal	2 06
Freight	
For re-shipment	2 50

Via Delaware and Raritan Canal.

TO NEW YORK.

Lehigh Canal	$ 57
Delaware Division Canal	38
Delaware and Raritan Canal	
Freight	1 25
Towage	20
Total	$2 60

MARKET REVIEW.

FOR THE WEEK ENDING NOV. 25, 1871.

IRON.—Scotch Pig has come forward quite freely since our last, but there has been an increased demand, and nearly all the late arrivals are reported sold at full prices. The sales are 1300 tons Summerlee, 800 do. Glengarnock, and 200 do. Eglinton, on private terms, the market closing steady at $34@35 for Glengarnock, $33@34 for Eglinton, and $39 for Coltness. There is no Gartsherrie here. American meets with very little inquiry, but remains steady at $36@37 for No. 1, and $34@35 for No. 2 ex. The demand for new Rails continues light, but prices are unchanged. Old are in moderate request, and we notice sales of 500 tons double-headed on private terms. Refined Bar continues steady and firm at previous quotations, and higher prices are probable, as the English are again 5s.@10s. higher, and the market highly excited. Some of the recent arrivals of Russia Sheet have been sound, and these are held at 18 cents, gold; 150 packs No. 1 Stained sold at 13 cents, gold. American Sheet is in small supply; we quote common No. 24, 5¼ cents; No. 27, 5½; and Charcoal 6@6½, cash.

LEAD.—Pig is quite dull, and without business; prices are nominally as before. Bar 9¼ cents, Sheet and Pipe 10¼, and Tin-lined Pipe 15, all less 10 per cent. to the Trade.

COPPER.—New Sheathing Copper is taken as wanted at 31 cents, and Braziers and Bolts 34, Bronze and Yellow Metal Sheathing 24, and Yellow Metal Bolts 25, all net cash. Ingot continues in request, chiefly for future delivery, and the advance in prices has made further progress to the extent of ¼@¼ cent per lb. The transactions embrace 6@700,000 lbs. Lake at 24@24¼ cents for immediate, and 24¼@24½ for delivery from the latter part of this month until January.

SPELTER.—Foreign is firm at the recent advance. 50 tons Silesian sold at 6½ cents, gold. Domestic is steady; best Lehigh is quoted 11 cents, currency.

TIN.—The cable accounts from London relative to Pig, continue of a very favorable character for holders, despatches yesterday quoting English there £151, a further considerable advance. Here, the market, though quiet, is very firm, higher prices than those previously current being at the close generally demanded. Sales have been made of 250 slabs Straits and 50 do. Banca, on private terms. Straits is now held at 38 cents, English 36¼@36½, and Banca 42, all gold. Plates continue in good demand at full prices, the tendency being still in sellers' favor. The sales are 2000 bxs. Charcoal Terne, part to arrive, at $8@8 50, gold, and 1500 do. and 3000 do. Charcoal Tin, part to arrive, on terms not made public.

STEEL.—Of all descriptions continues very steady, at our quotations for lots from store.

ZINC.—Sheet is very scarce on the spot, and higher prices have again been realized. 200 casks Mosselmann sold from agents' hands, for arrival, at 8½ cents, less 4 per cent., gold, and 100 casks from dealers' hands at 9¼@10 cents, gold, for Mosselmann (10⅛ now asked for assortments, and 10½ for 9 by 36), and 9¾@10 currency for Lehigh Star, now firm at 10, cash. Manganese black oxide, 4½; Manganese Pyrolusite, 5½.

METALS.

NEW YORK, Nov. 25, 1871.

IRON.—Duty: Bars, 1 to 1½ cents ₩ lb; Railroad, 70 cents ₩ 100 lbs.; Boiler and Plate, 1½ cents ₩ lb; Sheet, Band, Hoop, and Scroll, 1¾ to 1¼ cents ₩ lb; Pig, $7 ₩ ton; Polished Sheet, 3 cts. ₩ lb; Galvanized 2½; Scrap Cast, $6; Wrought, $1 per ton.

	Store Prices
Pig, Scotch No. 1, ₩ ton	34 00@40 00
Pig, American, No. 1	36 00@37 00
Pig, American, No. 2	34 00@35 00
Pig, American, Forge	31 00@34 00
Bar Refined, English and American	80 00@— —
Bar Swedes, assorted sizes (gold)	85 00@100 00
	Store Prices, Cash.
Bar, Swedes	107 50@120
Bar, Refined, ord'y sizes	85 00@ 1 —
Bar, Refined, 1¼ to 6 by ¼ @ 5-16 inch	— —@ 90 00
Bar, Refined, 1 & 1½ by ¼ & 5-16	— —@ 92 50
Bar, Refined, 2½ to 3 Round & Square	— —@ 92 50
Scroll	102 50@132 50
Ovals and half-round	102 50@122 50
Band	— —@ 97 50
Horse Shoe	100 00@105 00
Rods, ⅜ to 3-16 inch	90 00@125 00
Hoop	107 50@150 00
Nail rod	6¾@— —
Sheet, Russia, as to assortment (gold)	17½@18
Sheet, Single, D. and T. Common	—5 @— 5¾
Sheet, D. and T. Charcoal	—6 @— 6¾
Sheet, Galv'd, Nos. 14 to 26	21½ to 31 ct. dis. 12@14c ₩
" " Nos. 27, 28, and 29	27½ to 30 ct. dis. 15@18c ₩
Rails, English (gold), ₩ ton	57 00 @59 00
Rails, American, at Works in Pa.	70 00 @71 00

STEEL.—Duty: Bars and Ingots, valued at 7 cents ₩ lb or under, 2¼ cents; over 7 cents and not above 11, 3 cents ₩ lb; over 11 cents, 3½ cents ₩ lb, and 10 ₩ cent ad val. (Store prices.)

English Cast (2d and 1st quality) ₩ lb	— 15 @— 18
English Spring (2d and 1st quality)	— 7 @— 10
English Blister (2d and 1st quality)	— 10 @— 17
English Machinery	— 11 @— 13
English German (2d and 1st quality)	— 10½@— 12
American Blister "Black Diamond"	— — @— 12
American, Cast, Tool do.	— 15 @— 16
American, Spring, do.	— 9 @— 11
American Machinery, do.	— 9 @— 10
American German, do.	— 9 @— 11

COPPER.—Duty: Pig, Bar, and Ingot, 5; old Copper 4 cents ₩ lb; Manufactured, 45 per cent. ad val.

	All Cash.
Copper, New Sheathing, ₩ lb	— @— 31
Copper Bolts	— @— 34
Copper Braziers, 16oz. and over	— @— 34
Copper Nails	— @— 39
Copper, Old Sheathing, &c. mixed lots	20 @— 21
Copper, Old, for chemical purposes, 14@16 oz.	23½@— —
Copper, American Ingot	24¼@— 24½
Yellow Metal, New Sheathing & Bronze	— @— 24
Yellow Metal Bolts	25 @— —
Yellow Metal Nails	— @— 24

SPELTER—Duty: In Pigs, Bars & Plates, $1.50 p. 100 lb

Plates, Foreign (gold) p. 100 lb.	6 12½@ 6 50
Plates, Domestic p. lb.	— 7 @— 11

LEAD.—Duty: Pig, ¢2 ₩ 100 lbs.; old Lead, 1½ cents ₩ lb; Pipe and Sheet, 2¾ cents ₩ lb.

Galena, ₩ 100 lbs	$— — @— —
Spanish (gold)	5 90 @6 00
German, do.	5 90 @6 00
English do.	6 15 @6 50
Bar (net)	9 25 @ —
Pipe (net)	— — @10 25
Sheet	— — @10 25
Colwell, Shaw & Willard Tin-Lined Lead Pipe 15 cts. ₩ lb.	

TIN.—Duty: Pig, Bars, and Blocks, 15 ₩ cent. ad val.; Plate and Sheets and Terne Plates, 25 ₩ cent.; Roofing 25. ad val.

	Gold ₩ lb.
Banca	42 @42½
Straits	— @38
English	36¼@36½

PLATES. *Fair to Good Brands.*	*Gold.*	*Currency.*
I. C. Charcoal, ₩ box	$8 87½@9 25	$10 37½@11 00
I.C. Coke	7 75 @8 75	9 25 @10 25
Coke Terne	6 50 @7 62½	7 50 @ 9 25
Charcoal Terne	7 87½@8 50	9 75 @10 25

ZINC—Duty: Pig or Block, $1 50 ₩ 100 lb.; Sheet, 2½ cts. ₩ lb.

Sheet, No. 9 Foreign ₩ lb.	— @— 10¼@ 10½

San Francisco Stock Market.

BY TELEGRAPH.

The following report from the San Francisco Mining Stock Board is dated the 21st instant. With the exception of an unchanged condition in Savage and Chollar, the list is decidedly weaker, a fact which shows a more settled condition of the market compared with the irregular tendency noted in our last. Crown Point has materially advanced, compared to our last report of that item which was dated the 10th inst. Amador was placed on the list of the 16th, at $270; Eureka G. V. on the same date stood at $25.

Savage	46
Yellow Jacket	58
Kentuck	140
Chollar Potosi	31½
Gould & Curry	97
Belcher	365
Crown Point	332½
Raymond & Ely	..
Imperial	..
Amador	..
Eureka G. V.	..
Meadow Valley	..

Mining Stocks.

With the exception of a slight advance in Central, Gold Stocks are weaker. La Crosse seems to be the only item on the list possessing sufficient interest to attain a selling point, 300 shares of which changed hands on the 20th inst. at 19, and 1000 shares this morning, in two equal sales, at the same figure. The report is as follows:

GOLD STOCKS.

	BID.	ASKED
American Flag	—	20
Bates & Baxter	25	—
Benton	—	5
Black Hawk	—	—
Central Gold	2	5
Cons Gregory	—	30
Grass Valley	4	7
Gunnell	8	—
Holman	—	—
La Crosse	14	19
Liberty	—	—
Mariposa prf.	—	—
Montana	—	—
Rocky Mount.	—	5
Quartz Hill	—	15
Smith & Parmlee	—	—
N. Y. & Eldorado	—	20

Petroleum has materially advanced, compared with our last report. Central and Pithole Creek have gone away up. It would be reasonable to expect at least a few sales under these favorable circumstances, but we are compelled to chronicle the same chronic dullness in this respect that has characterized the condition of the list for a long time past, viz. no sales. The following is the report:

PETROLEUM STOCKS.

	BID	ASKED
Bennehoff Run	20	—
Bergen Coal and Oil	15	—
Bliven Oil	30	—
Blood Farm	5	—
Brevoort	25	—
Buchanan Farm	35	—
Central	65	70
Clinton	15	—
Home	1 60	—
National	—	—
New York & Allegheny	70	—
Northern Light	30	—
Phillips Pet	—	15
Pithole Creek	—	1 00
Rathbone Oil	20	—
Rynd Farm	33	—
Second National	—	40
Sherman & B	—	—
Tarr Farm	—	—
United Petroleum Farms	35	40
United States	29	30

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96TH AUCTION SALE.

100,000
TONS SCRANTON COAL,
ON WEDNESDAY, NOV. 29TH, 1871.

NEW YORK, October 18, 1871.

The DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY will sell, by Messrs JOHN H. DRAPER & Co., Auctioneers, at the Company's Sales Room, 26 Exchange Place, corner of William street, New York, on Wednesday, Nov. 29, at 12 o'clock, noon,

100,000 TONS

of COAL, from the Lackawanna regions, of the usual sizes, deliverable at their Depot, Elizabethport, N. J., during the month of December, 1871.

The sale will be positive; each lot put up will be sold to the highest bidder; no bids, in any form whatever, being made for account of, or on behalf of the Company. The conditions will be fully made known at the time of sale.

TERMS: Fifty cents per ton, payable in current funds, on the day of sale, and the balance, within ten days thereafter if required, at the office of the Company.

SAMUEL SLOAN, President.

NOTICE IS HEREBY GIVEN THAT THE Tobacco Manufacturers' Association has changed the place of the Manufacturing part of its business from the city of New York to Greenpoint, in the city of Brooklyn and State of New York, but continues to have its Office and principal place of financial business in the city of New York.

CORTLANDT PALMER, Jr., Secretary.
Dated November 18, 1871. n28-3m

E. B. BENJAMIN,
10 Barclay Street,
IMPORTER OF
CHEMISTS AND ASSAYERS' UTENSILS,
In every variety
Assay Balances,
Furnaces,
Chemicals,
Blow Pipe Sets,
In cases and details,
Crucibles, Cupels, etc.
Also, a very large stock of choice and rare chemicals, and glassware for use in laboratories. may2

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WESTERN & COMPANY, Publishers,
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DEPARTMENT OF POPULAR SCIENCE.

What is a Wonder?

Mr. Charles Kingsley, after a period of literary silence (so to speak) which seems long, compared with the intervals between those earlier works which put him in the foremost rank of English authors, has published a charming volume of travel in the West Indies.* His extraordinary power in description, and felicity in digression and reflection are here displayed. I quote as a specimen of the latter sort, and as an interesting statement of the question which heads this article, the introduction to his chapter on La Brea, the Pitch Lake of Trinidad.

"We were," says Mr. Kingsley, "of course desirous to visit that famous Lake of Pitch, which our old nursery literature described as one of the 'Wonders of the World.' It is not that; it is merely a very odd, quaint, unexpected, and only half-explained phenomenon; but no *wonder*. That epithet should be kept for such matters as the growth of a crystal, the formation of a cell, the germination of a seed, the coming true of a plant, whether from a fruit or a cutting—in a word, for any and all of those hourly and momentary miracles which were attributed of old to some *vis formatrix* of Nature, and are now attributed to some other abstract formula, as they will be to some fresh one, and to a dozen more, before the century is out, because, the more accurately and deeply they are investigated, the more inexplicable they will be found.

So it is; but the 'public' are not inclined to believe that so it is, and will not see, till their minds get somewhat of a scientific training. If any average educated person were asked which seemed to him more wonderful, that a hen's egg should always produce a chicken, or that it should now and then produce a sparrow or a duckling, can it be doubted what answer he would give? or that it would be the wrong answer? What answer, again, would he make to the question, Which is more wonderful, that dwarfs and giants—*i. e.*, people under four feet six or over six feet six—should be exceedingly rare, or that the human race is not of all possible heights from three inches to thirty feet? [Mr. Kingsley's meaning breaks down in this last antithesis; he intends, doubtless, 'or that the human race *should* be of all possible heights.'] Can it be doubted that in this case, as in the last, the wrong answer would be given? He would defend himself, probably, if he had a smattering of science, by saying that experience teaches us that nature works by "invariable laws," by which he would mean usually unbroken customs, and that he has, therefore, a right to be astonished if they are broken. But he would be wrong. The just cause of astonishment is, that the laws are, on the whole, invariable; that the customs are so seldom broken; that sun and moon, plants and animals, grains of dust, and vesicles of vapor are not perpetually committing some vagary or other, and making as great fools of themselves as human beings are wont to do. Happily for the existence of the universe, they do not. But how, and still more why, things in general behave so respectably and loyally, is a wonder which is either utterly inexplicable, or explicable, I hold, only on the old theory that they obey some one—whom we obey to a very limited extent indeed. Not that this latter theory gets rid of the perpetual and omnipotent element of wondrousness. If matter alone exists, it is a wonder and a mystery how it obeys itself. If a Spirit exists, it is a wonder and a mystery how He makes matter obey Him. All that the scientific man can do is to confess the presence of mystery all day long, and to live in that wholesome and calm attitude of wonder which we call awe and reverence, that so he may be delivered from the unwholesome and passionate fits of wonder which we call astonishment, the child of ignorance and fear, and the parent of rashness and superstition. So he will keep his mind in the attitude most fit for seizing new facts when they are presented to him. So he will be able, when he doubts of a new fact, to examine himself, whether he doubts it on just grounds; whether his doubt may not proceed from mere self-conceit, because the fact does not suit his preconceived theories; whether it may not proceed from an even lower passion, which he shares (being human) with the most uneducated, namely, from dread of the two great bodies, Novelty and Size—novelty, which makes it hard to convince the country fellow that in the tropics great flowers grow on tall trees, as they do here on herbs; size, which makes it hard to convince him that in far lands trees are often two and three hundred feet high. It is not surprising, but saddening, to watch what power these two phantoms have over the minds of those who would be angry if they were supposed to be uneducated. How often has one heard the existence of the sea-serpent declared impossible and absurd on these very grounds by people who thought they were arguing scientifically: the sea-serpent could not exist, first, because—it was so odd, strange, new, in a word, and unlike anything they had ever seen or fancied; and secondly, because it was so big. The first argument would apply to a thousand new facts which physical science is daily proving to be true; and the second, when the reputed size of the sea-serpent is compared with the known size of the ocean, is rather more silly than the assertion that a ten-pound pike could not live in a half-acre pond, because it was too small to hold him. The true arguments against the existence of a sea-serpent, namely, that no ophidian could live long under water, and that therefore the sea-serpent, if he existed, would be seen continually at the surface; and again, that the appearance taken for a sea-serpent has been proved, again and again, to be merely a long line of rolling porpoises—these really sound arguments would be nothing to such people, or would only be accepted as corroborating their dislike to believe in anything new, or anything a little bigger than usual. But so works the average, *i. e.*, the uneducated and barbaric intellect, afraid of the New and the Big, whether in space or in time. How the fear of these two phantoms has hindered our knowledge of this planet, the geologist knows only too well."

Very good, and partially true; but there is something to be said on the other side. The emotion of wonder is excited by the quality of novelty, and that only. Reverence is not wonder, because it lacks the element of surprise. Hence the wonders of nature are wonders only to persons (such as travelers) who see them occasionally, or to observers who are puzzled as to their causes—that is, as to their classification and relations among other observed facts. The uneducated intellect, in spite of Mr. Kingsley, tends to accept the New and the Big; and this tendency, not its opposite, has hindered most the progress of our knowledge. The Big, by the way, as he states it, is but a variety of the New; and the more novelty there is in an asserted fact, that is, the more it is out of joint with established facts and classes of facts, the more it is to be doubted. Mr. Kingsley's "true" arguments against the sea-serpent are but illustrations of the tendency he condemns. Barbarians reject it because it is so big (a reason not without scientific basis in anatomy) and odd; Mr. Kingsley, because ophidians cannot stay under water—in other words, because a sea-serpent, not an ophidian, or an ophidian that could stay under water, would be an oddity, not referable to other classes of known facts. The porpoise-argument proves nothing, either to Greeks or barbarians; but so far as it goes, it rests on the same "uneducated" foundation. The supposed sea-serpent having been repeatedly explained as a line of porpoises, any new observation of him, *not* a line of porpoises, would be too great a novelty or oddity to be accepted.

The scientific man differs from the vulgar merely in this, that he perceives more clearly and widely the relation of things, and can more justly weigh probability against novelty. All our knowledge of the material universe comes to us through our senses. Individuals are deceived sometimes in one observation, sometimes in repeated observations of the same thing; but the occurrence of the same deception to a large number of observers, with respect to the same object, is justly considered as so great a novelty as to be incredible. Hence the concurrent testimony of men (due regard being had to their competency and sincerity) is accepted as establishing the existence of facts, however apparently novel; and on this basis all science and history rest, though science in many cases permits the verification of facts by each generation of observers, and the corroboration of former testimony.

Wonders in science are facts plausibly and credibly attested, but as yet incapable of classification. They will all be eventually either overthrown or explained—that is, classified. Spontaneous generation, the psychic force, the occult magnetic and electric conditions of matter, catalytic phenomena, and many others belong in this class. So does the Pitch Lake of Trinidad, and so does not the sea-serpent, because the testimony to his existence is not yet sufficien to counterbalance his excessive bigness and novelty. What Mr. Kingsley stigmatizes as the weakness of vulgar minds is the natural and proper function of reason. Education merely develops it in strength and trains it in application.

* At Last: a Christmas in the West Indies. By Charles Kingsley. New York: Harper & Brothers, 1871. pp 465.

New Publications.

The Manufacture of Russian Sheet-Iron. By John Percy, M. D. F. R. S. *Lecturer on Metallurgy at the Royal School of Mines, London, etc. With Illustrations. To which is Added an Appendix on American Sheet-Iron. Philadelphia:* Henry Carey Baird, *Industrial Publisher, 406 Walnut St.* 1871. *Price* 50 cts.

This pamphlet was originally published at the request, and for the information, of several Welsh manufacturers of tin plate, who thought that they might derive some suggestions of practical value from an account of the process pursued in Russia for the manufacture of the justly celebrated sheet-iron.

It seems that the lack of general information regarding the process employed in the Oural, is due rather to the remoteness of the districts where it is carried on, than to any desire to keep it a secret.

In the first pages of the pamphlet are given a description of the appearance and uses of the article treated of, and analyses of two samples, from the collection of the Museum of Practical Geology in London, by Mr. W. J. Ward, the assistant of Dr. Percy. The remainder is devoted to descriptions of the method of manufacture by several engineers who have personally examined it, among whom we may mention Prof. Pumpelly of Harvard.

The iron from which the sheets are made is a good quality of charcoal pig, either puddled, or converted into malleable iron in a charcoal finery. According to one account, only the latter process has been found to give a satisfactory product, which is first rolled into plates 2½ feet long and 5 inches wide. These are heated and rolled to a width of about 15 inches, after which several sheets are packed together, heated, rolled and hammered, charcoal powder being from time to time strewed between the sheets.

Mr. Beardmore, who contributes one of the accounts, says that a Frenchman from Berndall's works, with whom he conversed on the subject, said: "C'est tout-à-fait une affaire de poudre de charbon"—"it is wholly a matter of charcoal powder."

However, from the descriptions given, we judge that, though charcoal powder plays an important role, still the skillful manipulation of the workmen, the judicious annealing of the plates, and the rigid rejection of all inferior finished sheets, have had their share in giving celebrity to the product.

Utah Tin Again.

The *Tribune* of the 22nd inst, contained the following paragraph:

"Washington experts pooh-poohed the specimens from the Utah "tin" mines, but the possibility that the newly-discovered metal is cadmium, instead of tin, makes their judgment of small account. If the mineral deposit is really cadmium, it is a valuable discovery, for that metal is rare and costly. To be sure, its price is enhanced by its rarity, but if it can be found in considerable quantities, it can be used for precisely the same purposes as tin, and is even more desirable than that useful metal. It takes a high polish, does not oxidize, is ductile and easily worked or fused. Tin mines were well enough in their way, but mines of cadmium would be a genuine treasure trove."

This, we think, is the most illogical paragraph that we have ever seen in the *Tribune*. Mr. Greeley is strongly in favor of encouraging home manufactures and production, and so are we, but we fail to see "the point" of the first sentence.

We suppose that if the experts now examine the specimens for cadmium, and find none, we shall be told, that their judgement is of but little account, because *the ore* may possibly contain some other, and perhaps even more valuable metal, for example, gold. Cadmium has been made for years in Silesia, for laboratory use, and some colors are prepared from it. In England alloys have been made with it, but on the whole, only a few uses have been found for it in the arts.

THE ENGINEERING AND MINING JOURNAL.

ROSSITER W. RAYMOND, Ph. D.,
WILLARD P. WARD, M. E.,
Editors.

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Army Control of Mining Interests.

The *Army and Navy Journal* of November 11 contains an ably written leader with the above title, pointing out the evils of the present system of mining titles on the public domain, and suggesting as a remedy the closer control of this interest by the Government. Incidentally, it is remarked, that the best agents in the work would certainly be the Army officers.

The statement of present evils, in the article referred to, is not overdrawn, though incorrect in some minor points. It is not true, for instance, that the laws of Congress restrict the legal length of a "lead" to 1,500 feet. The restriction is 200 feet for each locator, and three thousand feet for "any one claim by any association of persons." Nor is it a universal feature of local mining laws that a certain amount of work must be done annually to hold a claim. The Supreme Court of Nevada, overruling the decision of a lower court, has held that complete neglect of a claim for a year does not destroy the miner's title. Most of the litigations which infest the mining industry in the West arise out of just such "prior titles," resuscitated after abandonment to afflict a later occupant of the neglected claim. The case is therefore even worse than the *Army and Navy Journal* conceives.

That paper adopts the view which we have for years been endeavoring to enforce, when it declares that the possessory title should be dependent upon actual occupation and improvement, and that the attempt to hold "locations" indefinitely, without developing the mines, is "a direct violation of the conditions on which mining titles are surrendered by the Government"—though the spirit, rather than the letter, of the Federal law on this subject must be relied on to support this view.

But we do not agree with our cotemporary that titles forfeited by failure to improve should be withheld from re-location, and sold at auction. This plan is open to two vital objections. It is unjust, and it is impracticable. The whole object of the Government is to encourage and hasten development. If a claim has been once located and then abandoned, it is for the public interest to encourage somebody to try it again. But the Government will never get any price for it at auction in its abandoned state, except on the ground hinted by our military friend, that "these lapsed titles would be the most valuable of any" (which means, we suppose, of *all*.) Now this value would consist merely in the early date of the titles; and purchasers of them could have but one object, namely, to vitiate the later titles of neighboring and more successful mines. This plan would therefore make the Government a party to the worst blackmailing schemes. It would make legal what is now but imperfectly protected by absurd local customs. Justice and policy both demand that a possessory title should lapse by abandonment, and *become forever harmless* as against subsequent *bona fide* locations in its neighborhood. If it is re-located, the new title dates from the re-location, and the industrious neighbor has nothing to fear for his rights, acquired between the dates of the two titles.

The quarterly inspection of all claims by the Recorder is another impracticability. The number of locations in the West is immensely greater than the *Army and Navy Journal* imagines; and the machinery it proposes is inadequate. If it will study the elaborate discussions of this subject contained in the successive reports of the United States Commissioners, it will find reasons for reconsideration. The evils it points out are patent; the remedies are not to be suggested in a hurry.

Finally, the notion that army officers should represent the Government in this matter and "control" the mining interests scarcely deserves discussion. An enormous increase in the number of detached officers, and hence an enormous quantity of new appointments would have to be made; and in that case the epaulettes would be no sign of particular fitness for the work. If the *Journal* means that the officers now in command of troops should assume the duty of inspectors or controllers or whatever else they might be called, we reply that the thing is physically impossible, and would not be advisable if it were possible. Improvements in the army just now should be in the direction of greater efficiency in attending to its own business. If it will save us the necessity of fighting Indians, we will not trouble it to look after the mines.

The Narrow Gauge.

IN a recent number of *Engineering*, the editor saw fit to criticise the course which had been adopted by the leading engineering periodicals of this country with reference to the question of railway gauges. He fails, however, to notice an argument against narrow gauges in this country, which we have already advanced, and which would not hold good in England. There, railroads are built to bring to market the products of the districts through which they run, whereas in this country nothing is more common than to construct a railroad through a wilderness, in order to hasten the settlement of a fertile district, which will, in turn, furnish business for the road. At first the railroad has need for only small capacity for freight or passengers, but as such roads are laid through rich sections of country only, the traffic soon increases to such an extent that a second track is required, and furnished with ample business. There is no necessity, at first for even a single broad gauge track, but that state of affairs is not of long duration, for the very simple reason that no one would think of constructing such a road through a district which was not almost certain soon to yield a very large traffic. When such districts are provided with railways, we may begin to develop the less promising ones, and then we may call upon our narrow-gauge friends for their assistance. The astonishing rapidity with which our continental net of railways has been constructed, shows that the capital required to construct roads, through promising districts, is not difficult to obtain, and we fail to see the economy of building roads which will before a great while cease to afford the necessary accommodation for freight and passengers.

In England and other European countries, on the contrary, there are districts which now yield too little freight and passenger traffic to keep a road of a large carrying capacity busy, and which are not likely to yield the requisite quantity for years, perhaps never. The returns from the traffic already to be had might suffice to pay fair interest on the cost of a narrow-gauge road, which would there answer an excellent purpose as a feeder to a main line. In this country, however, as we before remarked, we have but little occasion to build roads under such conditions; when we do, we will be glad to see narrow-gauge roads employed.

Agassiz' Exploration of the Southern Oceans.

AMONG the questions to be determined by this expedition are the temperature and percentage of salt which the sea water contains at different depths.

The latter question would be very difficult to solve on shipboard by any analytical process in use, and therefore recourse has been had to an exceedingly simple and ingenious method. The density of water increases, within certain limits, in exact proportion to the amount of salt which it contains, and therefore accurate determinations of its specific gravity would show how much salt it contained. Accurate results are, however, not so easily had, even with very delicate hydrometers, on an unsteady vessel, and hence it is proposed to ascertain the density of the water by means of its varying index of refraction. A hollow glass prism is so mounted as to form an apparatus that can be held in the hand like a sextant, and by which the angle of refraction can be measured. If this prism be filled with sea-water of different densities, a ray of light passing through it will be refracted at different angles. The determination of this angle, which can be quickly and easily done on board ship, will furnish a means of determining the amount of salt contained in the water.

The temperature at different depths will be determined by self-registering thermometers, so mounted as to protect them from injury, and it is, we believe, proposed to employ also an apparatus invented by Mr. SIEMENS for determining high temperatures. It is based on the principle that the resistance that a galvanic current encounters in passing through a coil of wire increases with the temperature of the wire, other conditions being the same.

An apparatus has been constructed by means of which it is hoped that the depth to which the light of the sun penetrates beneath the surface of the ocean may be determined. By means of clock-work, a photographic plate is exposed for a given time, after having been sunk to any desired depth, and again covered up. It can then be drawn up to the surface and examined, in the usual way, in order to discover whether it has been at all exposed to light, and if so, the relative intensity of the light. An apparatus of this kind has already been used, but the pressure of the water at great depths was so great as to damage the working of the machinery, which was somewhat complicated. A simpler arrangement has now been made, and protected by thick glass plates. Another apparatus has been constructed so that the clock-work will run evenly and well in water or glycerine,

with which the containing box will be filled, in order to resist extreme pressure at very great depths.

The expedition was to have sailed in the steamer "Hassler," on the 1st of September, but it is not even now positively known when they will get off. At all events, we expect that they will have accomplished great things when they reach San Francisco next summer.

Lyell's New Geology.

The science of geology is confessedly incomplete not only in the same sense as all sciences are incomplete, but also with reference to its fundamental theories, leading principles and methods. Comparatively few of these elements have been so firmly established that all geologists agree upon them. Among these may be reckoned the general significance o stratigraphical position, the sedimentary genesis o certain kinds of rock, the vegetable origin of coal, the gradual development of living organisms through successive ages, the great length of geological history antecedent to man, the former prevalence in many localities of climates different from those of the present time, the existence of glacial, fluviatile and meteoric activities, &c., &c. With reference, on the other hand, to the origin of many so-called plutonic rocks, the nature of volcanoes and earthquakes, the present condition and past history of the earth's interior, the real value of lithological and palæontological characters in determining the relative age of rocks, the absolute and relative duration of geological periods, the antiquity of organic life upon the globe, the antiquity of man, the cause and geographical extent of climatic changes (such as conditioned the glacial period), the origin and classification of mineral veins and ore deposits, and, in general, the whole terminology, logic and dynamics of the science, as well as myriads of disputed observations and deductions in detail, geologists are divided into schools and factions.

Sir CHARLES LYELL once headed such a school but the views he then championed have now been generally accepted as to be considered orthodox, if anything is orthodox in geology. It is to him, perhaps, more than to any other one man, that we owe the overthrow of the doctrine of catastrophes and convulsions, and the establishment of the opposite doctrine, that the effects recorded in the rocks of former geological periods must be ascribed (in the absence of positive knowledge or on of special causes) to such natural laws and agencies as are still operative; that the most violent results, in appearance, are frequently due to the slowest processes; in short, that the geologist, obliged to assume one large and undetermined factor, to account for the magnitude of the phenomena produced, should assume time as that factor, not sudden and catastrophic force.

Of course this dogma has its limitations and exceptions; already the physicists and astronomers are setting bounds to the exorbitant demands made upon time by the geologists. No doubt it is unphilosophical, though convenient, in attempting to account for observed phenomena, to throw into the boiling pot of our synthesis the definite causes which we know and can measure, and then add time, as cooks add salt, "to suit the taste." But the tendency of this school in geology has been eminently wholesome. It has cleared the field of many extravagant growths, and prepared the ground for substantial foundations.

The publication by Sir CHARLES LYELL of a new and entirely recast edition of the "Elements of Geology" is an event of importance to the general reader; and we have examined the book from this standpoint, with considerable interest. As the age and eminence of the author would naturally lead us to expect, it is conservative in tone with regard to the most recent novelties of geological theory, while, on the other hand, it does not fail to reflect with comprehensive fidelity and judgment, the present condition of disputed, as well as of settled questions. Thus the *Eozoon Canadense*, is endorsed; the Cambrian system (once rudely abolished by the dictum of Murchison) is readmitted; the Huttonian theory of metamorphism is retained "as the most probable," while the crystalline rocks, plutonic and metamorphic, are classed together as *hypogene;* all the granites are ranked as plutonic, that is, "of igneous or aqueo-igneous origin;" and the troublesome questions of earthquakes, the origin of volcanic force, and the condition of the earth's interior, are entirely let alone. These omissions are probably to be explained by the nature of the book as a student's manual; and we infer that Sir CHARLES LYELL thinks beginners in geology had better confine themselves to more practical inquiries—a view in which we heartily coincide. We particularly welcome the excellent chapter on the chronological classification of rocks, in which the relative value of stratigraphical, palæontological and lithological evidence is clearly stated.

There is a tendency among our geologists to exaggerate the importance of leading fossils, and to "identify," by means of them, alleged synchronous formations, unconnected by stratigraphical proofs. This passion for fixing the age of rocks has gone so far that no less an authority than STERRY HUNT has attempted to arrange the Laurentian and Huronian rocks by lithological characters alone. The adoption of fossils for such a purpose is more reasonable; but a little reflection will show that deductions from such data may easily be carried too far. The presence, for instance, in a certain European and a certain American formation, of similar fauna or flora, does not prove the synchronism of the two formations.

Calling them by the same name does not add anything to the evidence. There is strictly no proof that the Triassic of Europe was formed at the same time with the Triassic of America, or that the Carboniferous of Russia or China was contemporaneous with the Carboniferous of Pennsylvania. Indeed, the proof, in the later geological formations, is the other way.

Lithological and palaeontological resemblances indicate similar conditions; and the whole progress of telluric history has been towards contemporaneous dissimilar conditions. It is more in accordance with present phenomena to assume waves of similar conditions, producing successively in different zones similar forms of life, than to postulate a universal uniformity at any one time. The application of this argument to such generalizations as that of Murchison with reference to the Silurian rocks as the exclusive matrix of gold, or that of AGASSIZ with reference to the extent of the glacial period, (both of which, we suppose, may now be considered as overthrown,) is sufficiently obvious. At all events, we think the student of geology, like the student of any other science, should be most plainly advised at the outset, of the true significance of classifications and nomenclatures, and warned against the danger of mistaking names for things, man's systems for nature's laws.

SIR CHARLES LYELL's book is inferior in arrangement to the manual of Professor DANA, and is naturally less copious in its references to American geology. There is no danger that it will supersede the works of our home Nestor; though in many particulars it is superior. The introductory chapters on the different classes of rocks, petrifaction, stratification, denudation, upheaval, etc., are positively fascinating, and the whole volume is attractive in an unusual degree to the layman who desires a clear statement of the general features of a subject, complex and difficult to the apprehension of most persons outside of the circle of its expert professors. A perusal of this work will be likely to convince the reader that there is no mystery in geology, though much ignorance; and that whatever things are really ascertained as yet in the realm of this science are not difficult to understand.

MINING SUMMARY.

California.

From the Mokelumne Hill *Chronicle* of Nov. 4.

Developments have recently been made at Gwin mine, in Lower Rich Gulch, unparalleled in the history of quartz operations in this State. A stratum of rock has been discovered in the main shaft at a depth of four hundred feet, which for richness eclipses anything we have ever heard or read. The strangest feature of the development, is, however, that the rock recently discovered so closely resembles the slate of which the walls of the lead are composed, that it has heretofore been taken out and thrown away with other *debris* from the mine. The stratum mentioned lies next to the foot wall, and is about a foot in width and thickness. The inclination of the "streak" differs slightly from that of the shaft. Commencing at a point near the surface, it crosses the latter diagonally, leaving the shaft to the 460-foot level. By "drifting" a short distance on the lead, however, from the 500-foot level, the stratum will undoubtedly be struck again. By the merest accident in the world it was discovered that this singular deposit, instead of being slate, was simply a mass of sulphurets, carrying free gold in abundance. A portion of the rock was brought to the town and critically assayed by Dr. J. HEPBURN. Two and one-half ounces yielded one hundred and sixty-six grains of gold, or, in other words, at the rate of $53.140 per ton! The rock assayed was not a selected "specimen." It was broken from a chunk at least a foot square, and is considered a fair test of the richness of the whole stratum. The proprietors of the mine are sanguine that they will take $200,000 out of the recently discovered "streak," between the 500-foot level and the surface. In fact, should this stratum prove to be one of the permanent component parts of the lead, there is no calculating the amount of gold that will be taken from it.

We have first-rate news from the San Bruno mine, located in Mosquito Gulch, owned by Messrs. HOERCHNER, SIEGLER & KEY. Twenty-seven tons of rock, crushed in the old Vance mill, yielded $2,000, an average of $74 per ton.

PETER DAVIS of Central Hill, who owned a very promising quartz ledge in that vicinity, has recently sold it to an English company. We do not know the price obtained. Work is to be immediately commenced on the mine, the new proprietors intending to sink the shaft one hundred feet deep.

From the Stockton *Republican* of Nov. 3.

Work has been resumed on the Union copper mines at Copperopolis, and ore is coming down from the mine. It is shipped in bags of one hundred pounds each. The Stockton and Copperopolis railroad has brought down 250 bags of ore, which is piled on the wharf. As soon as a schooner load is received it will be shipped to San Francisco, and thence to England.

BUTTE COUNTY.

From the Orville *Record* of Oct. 28.

Through the kindness of J. L. BETTERTON, we are in possession of a specimen of the quartz recently discovered by him near Mohawk. The rock is of a reddish brown color, and gold evenly distributed through it, is plainly visible to the "naked eye." As the work progresses the rock improves in character, quantity and richness. The ledge has been traced through the north and south extensions of Mr. BETTERTON's claim, and is well defined, well walled up, and gives evidence of being a permanent vein. The average width is from two to three feet. If the information which we have received is correct, we have no hesitation in announcing it one of the richest strikes made in the county for a long time. Mr. BETTERTON has put up an arastra, and will have it running in a short time.

It has lately come to light that some Chinamen working on the Middle Fork of the Feather River, below Nelson Point, about four months since, found a nugget of gold weighing fourteen pounds. The company buy their goods and sell their dust at MYERS' store, at Nelson, and several times lately Mr. MYERS has found pieces of gold in their dust, apparently cut from a chunk. The whole story came out a few days since, and it is pretty well established that the nugget weighed fourteen pounds.

NAPA COUNTY.

From the Napa *Reporter* of Nov. 4.

The prospects of several of our quicksilver mines, says the Napa *Reporter* of November 4th, are very flattering First in order we mention the Phœnix, in Pope Valley, which is better prospected than any other, and which has been paying dividends for the past year. Just now the company are erecting furnaces for the reduction of their

ore, at an expense of $20,000. They have been enabled to do this without an assessment upon the stockholders. It was found that the retort process was too slow and expensive, and only suited to the higher grades of ore. Lower grades, to the amount of 1200 tons, have accumulated, which, with about 800 tons of higher grade taken out since, will be ready for the new furnace, the iron work of which is being rapidly delivered. It is expected that the furnace or oven will be ready for work on the 1st of December! Its capacity will be twenty-four tons per day of twenty-four hours. The Whitton mine and the Oakville are also in a very promising condition. We hear that the latter company are erecting new works and have plenty of ore of good quality. Work is also actively progressing on the Valley mine.

Colorado.

From the *Miner* of Nov. 9.

The total bullion shipment for the month of October, of all the mills in the county, was $36,793.20. The ore shipment during the same time will equal in value the bullion shipment. The total product of our mines for the month of October therefore is $73,586.40.

The Stewart Silver Reducing Co. have shipped since our last issue,

Brick No.	Oz. Silver.	Fine.	Coin Val.
366	1175	764	$1160-66
367	1117	764	1103.37
368	1130	748	1092.82
369	1099	754	1071.41
370	1104	750	1070.55
371	549	744	528.08
372	751	768	745.74
Also Lead Bars,			
77	1046	390	527.39
78	939	390	473.41
			$7,773·46

The mill is running mainly on Terrible second class ore.

PALMER & NICHOLS have shipped

Bar No.	Oz. Silver.	Fine.	Coin Val.
414	1471.85	803	$1528.07
415	1498.85	608	1178.25
			$2,706.32

The International Mill, Argentine, has shipped

Bar Mo.	Oz. Silver.	Fine.	Coin Val.
29	1102	—	$1.300

Total for the week, $11,779.78.

The same paper has the following on the Comet Lode.

PETER J. SMITH and A. M. GRAVES have leased the west half of this lode, the property owned by the Comet Silver Mining Company. They have sub-leased three hundred feet of their ground, one hundred to T. P. OSBORNE & Son, and two hundred feet to A. REPEAL & Co. All the ground opened by these parties is furnishing first class milling ore, in considerable quantities. The last mill run of ore taken from the Comet by Messrs. SMITH and GRAVES, gave a yield of 209 ozs. per ton. The ore now being mined, on the ground worked, is of better average quality than any ever before mined out. Mr. REPEAL had an assay made of decomposed material taken from his ground that gave a yield of 1480 ozs. per ton. All the ore we saw, and there was a large number of sacks, had a very suspicious look of sulphurets of silver. Messrs. SMITH and GRAVES are working eighteen feet, in breadth, of pay ground.

The idea has prevailed that our mineral veins are narrow. This is a mistaken notion. The north wall of the Comet has never in our opinion been reached. Messrs SMITH and GRAVES have hauled, near the mouth of their mine, a great many logs for timbering purposes, and will work their ground vigorously during the winter. Thus individual enterprise is proving up another great mine that will add largely to the resources of the country. Only think of it, eighteen feet of pay ground! The Comet is blazing out a silver splendor that will be very satisfactory to the owners of the stock in the Comet Silver Mining Company.

IDAHO DISTRICT.

At an adjourned meeting held at Idaho Nov. 4th, 1871, a committee on mining statistics reported the following facts as to the amount of ore that can be produced from the different mines accessible to reduction works at or near Idaho: From 28 lodes, in Idaho District, the ore production amounts to 237 tons weekly. From ten of these lodes the mill yield averaged 165 ozs. per ton, silver; Gold—no report in items. From the balance—18 lodes give a fire assay of from 35 to 120 ozs. per ton. The above report shows the capacity of the mines at the present state of development. From 13 lodes in Mill City and Downieville District, the ore production amounts to 549 tons weekly. Mill returns from most of these lodes figure from 10 to 176 ozs. Fire assay of these lodes average 130 ozs. per ton. From Spring Gulch, Coral Mining District, three lodes yield ten tons per week, assaying from 45 to 128 ozs. per ton. From Chicago Creek District, five lodes yield 120 tons per week. The highest mill run from this District is 276 ozs. per ton; making a total ore production from all the above mines of 916 tons per week, or 47,632 tons per year. It would be useless for the committee to undertake to estimate the amount of ore that these mines would produce with reduction works of proper and sufficient capacity. There are many mines that would be worked and produce large amounts of ore when better facilities for their treatment are afforded.

Signed: T. J. DEAN, W. F. DOHERTY, A. W. MEYERS, R. B. GRISWOLD, Idaho.
R. C. GRAY, Chicago Creek.
A. S CARPENTER, — DUBOIS, Mill City.
Committee on Statistics.

PLACER MINING.

The *Herald* of Nov. 8th says:

Although quartz mining operations and reducing works for the treatment of ores form the leading features of our mining industries and the products of these furnish the greater portion of our bullion shipments, still gulch and placer mining is being actively prosecuted in some of our mining districts with profitable results. From a recent careful examination of the gulches and placers of Park and Summit counties, we are convinced that the superficial deposits of gold in these counties are very considerable and that the skilful management of the water of the streams, the construction of flumes of suitable capacity, and the employment of experienced practical gulch miners, are all that is required to make the working of these gulches exceedingly profitable. As an evidence of this, the yield of gold per hand per diem, in Summit county this year, is over one-half ounce, and this under most unfavorable auspices, caused by injudicious management of a really scanty supply of water on account of the dryness of the season, imperfect flumes in most instances, and too frequently unskillful labor. This estimate is based upon actual figures, not mere speculation. The gold shipment from the country exceeds 3,700 ounces; the number of men actually employed in taking this out will not exceed an average of 75 for 100 days—say 7,500 days labor with a return in gold of 3,700 ounces, not a bad array of figures and facts in favor of gulch ming. The yield of next season promises to be much larger and returns more profitable, as flumes of great length and capacity are in course of construction, and the facilities for booming and hydraulicing will be largely increased.

The *Boulder County News* of Nov. 10th says:

We last week saw the first charge of ore put into the new Swansea furnace of Messrs. KEARSING & PATTERSON, at Caribou, and before it was more than one fourth charged the ore was melting. The furnace stood the heat remarkably well, not cracking in the least. Considerable doubt has been expressed as to whether it will perform the work for which it was intended, but the proprietors have so much confidence in its success that they are obtaining material to erect four more of the same kind, with a capacity for working 24 tons per day. Mr. KEARSING says he has successfully worked the same kind of a furnace before, and is satisfied it will not fail now. Their single furnace has a capacity of four tons per day. The experiment was tried of calcining the ore in heaps, which is said to be successful. After calcining the ore is crushed in an ordinary Dodge Crusher before smelting. The intention is to make matte, similar to that made by Prof. HILL at Black Hawk, which will be sent elsewhere for separation and refining.

Missouri.

THE LEAD MINES OF COLE COUNTY.

From Coleman's *Rural World* of Nov. 18:

Heretofore the mines of Cole county were not considered of importance to the lead producers of the state; it is true the old Smith circle in that country for a time yielded large quantities of galena, but, like such circles usually exhibit, it soon ceased to be profitable, and is no longer of any value. The finding of the large deposit on the Scott property, near Pratt's mill, and the lead in the hill northeast of Mr. WEST, and on his farm, now named the High Lead Mines—lead all parties interested in mining to prospect thoroughly, resulting in the finding of lead in more localities than in any county in the state. The galeniferous portion of this county commences some five miles west of Jefferson City, passing to a point near Elston Station, and thence to the Missouri river, occupying the balance of the county. Galena is being found in more than two hundred localities, and mined in about twenty. A peculiarity is observed in all the lead found in the magnesian limestone—it is usually associated with sulphur of baryta, when passing into the rocks; crevices filled with the galena, tiff and limestone are found, with a wall rock of sachroidal sandstone; this continues down to a deep blue limestone, whose structure seems to have been entirely metamorphosed at some time to such an extent that most of the fossils are destroyed. On this rock the richest galena in township 43, range 13, west, seems to rest. On the farm of Geo. K. Johnston is seen this deep blue limestone approaching the surface—the only one observed in all the county in the lead districts—and here are presented some of the best mineral prospects we have seen. Mr. DAWSON, near the Moreau, a mile from Pratt's mills, has found and opened a lead of galena of paying size; but the water, as in so many instances, prevents the further development of the same. HENDERSON & BRO., a mile east of the Scott mines, owned by the Pioneer Co., have opened a rich deposit of lead that seems likely to prove permanent. Mr. WILLIAMS has opened a shaft two miles southeast of Hickory Hill, and is taking out considerable ore, associated with tiff and the green carbonate of copper. This is presented in regular veins in vertical position, trending to the E. S. E. On the farm of Judge FOWLER, near J. M. WRAYS, lead is being mined from the clay in paying quantities, and will no doubt present a large deposit as it approaches the limestone. On the farm of JOSEPH BARBER, near the Scott mines, the most satisfa tory results are being had in developing the mines opened by Mr. B. some two months ago. On the farm of J. M. WRAY there have been picked up cubes of pure galena, and there is no doubt rich deposits will be found here at no distant day, as it is the intention of the owner to have the same prospected carefully. In the western portion of the county there is great activity in prospecting and opening leads, and mining mineral as "float" in the clay. There is no locality in the state where lead mining is so easily and profitably carried on as in this county. The Pacific railroad passing through the north portion, the Missouri bounding it on the north and the Osage river passing through its southern and eastern regions—give ample facilities for transportation.

The same paper furnishes us the following Missouri mining items:

At Wilson's coal mine, three miles southwest from Hickory Hill, in Cole county, near the Jefferson City and Tuscumbia stage road, a good quality of cannel coal is being taken out. This coal is entirely free of sulphur and the pyrites of iron, and with the facilities of railroad transportation, would be mined to great profit. In township forty-two, in Cole county, there has been found a vein or lode of the sulphuret of lead, through whose cubes extend in various directions crenoids, whose structure has been changed to specular iron, while upon the wall rock containing the galena, there is a coating of the red oxide of iron. There are at present some peculiar characters in the coal mines of Morgan and Cole counties. In one of them there is a vein of zinc blende some two inches in thickness, very compact and uniform; another contains a vein of micaceous iron of three to four inches in thickness; and still another presents a vein of the pyrites of iron four inches thick, with a core of beautifully crystallized sulphur. On the farm of ROBERT SCOTT in township 43, Cole county, there has been discovered a bank of iron ore that presents an oxydized form at the surface; but, on examination a few feet below the surface, presents a very fine blue specular ore. Upon the same farm, but in the laminated clay, the pyrites of iron are found crystallized in octahedrons, with a covering outside of about one-fourth of the thickness, with the red oxide of iron. Sulphate of baryta is being mined in Camden and Miller counties in large quantities, and shipped to St. Louis by steamer. At Turner's mill, at the mouth of White Oak, on the Osage river, there are being ground large quantities of this tiff. The great body of tiff in Washington county, that has heretofore supplied our city with this article, does not seem to diminish; but the quantity from the Osage country will undoubtedly meet a ready sale and be highly remunerative. On the Swickerath property, in the county of Morgan, argentiferous galena has been found, showing quite a large percentage of silver. It is situated in a lode, passing into an opening in the magnesian limestone with a dip of 30 deg.; the lode or vein is some four inches in thickness, and increases as the excavation progresses.

At the Pioneer's new mines on the Moreau the furnace being built is nearly completed, and is one of the best reverberatory furnaces we ever saw. In ten days, smelting will be going on night and day; as the large amount of mineral already mined has accumulated so rapidly buildings are all full and there is no place to store it. We believe this is the richest lead mine in the state, and the past week visited it again, to see how the mineral continued in the shafts being sunk; there seems to be no diminution; and openings or crevices also begin to present themselves filled with galena. In the vicinity of this mine large deposits of heavy spar or ball tiff are being found. While on our examination of the mineral resources of Cedar county, a bank of very good micaceous iron ore presented the most brilliant red ochre we ever saw. This ochre had evidently been changed to its present state by the action that produced or formed the iron, and at the same time, and had once been a flint rock, as in many instances but one-half of the rock was ochre—the other in its natural state. If this should continue upon deeper excavation these ochres would be very valuable to commerce and much sought for, as ore presents a brilliant red, only superceded by the best vermillion. The most extensive deposit of sulphur we have seen is situated in the northwest corner of Crawford county, upon lands belonging to WM. JAMES, Esq., of the Merimac Iron Works. A shaft sunk for the purpose of finding lead came upon sulphate of baryta, with masses of sulphur in beautiful crystallization in masses of hundreds of pounds each. In the neighborhood there are several places where the same deposit may be found approaching the surface. These masses are from the surface clays and present, in many instances, the octahedral system of crystalization, and vary in size from an ounce to many pounds in weight. To this may be added that the pyrites of iron is also found associated with this sulphur in great quantity. To the manufacturer of sulphuric acid and caustic soda here is a rich mine of wealth.

That there may be no misapprehension we would state that this is not associated with Mr. JAMES' iron in any manner whatever, but is eight miles distant from the same. Gypsum in large crystals is being found in the clay at the iron banks a mile and a half south of St. James, on the A. & P. R. R. It is presented in star like masses at a depth of about fifty feet, imbedded in a close, greasy clay, almost an ochre yellow, at the bottom of the iron formations. In Camden county, twelve miles north of St. James, Mr. EMORY has taken out quite a quantity of galena. and present indications, to those who have seen the prospect, clearly point to it as a valuable lead deposit. From specimens shown us there are indications of the existence of cobalt and antimony with the lead.

The great lead mine on the Moreau, in Cole county, owned by the Pioneer Mining and Smelting Company, is yielding almost fabulous amounts of lead. A shaft sunk over twenty-five feet gives a steady and regular yield of about 2,000 pounds to the man per day. Several other shafts have been sunk in the vicinity, and in all, the same deposit of galena with associate minerals is found. This company in this purchase exhibited their usual foresight, in thus securing the richest lead mine we have ever seen. With the large lot of lands they have bought and leased adjoining this, and passing along, this rich mineral belt is worth more than two hundred thousand dollars, in fact its value can hardly be estimated at this time, but enough has been developed to warrant the statement we have made. We found in the northeast corner of Dent county a beautiful zinc blende formation, highly and brilliantly colored a deep blue, with peacock shades of a metallic lustre. This is situated in a ravine in tiff with a bastard limestone, and might indicate the presence of lead close by. Coal of a three foot strata is now being mined in Crawford county, and is of superior quality. There is presented a mass of it in close association with sandstones of that section. It is the true bituminous coal and burns freely with little or no smoke, and as far as developed shows no pyrites of iron or sulphur, but a seam of metamorphosed slate seems to follow the strata.

Axes made from blue specular iron, fashioned and hardened into formidable weapons by a race whose history is unwritten, are being found in the iron districts along the A. & P. R. R. Prospectors for lead are almost everywhere turning out the mineral in paying quantities. In Camden, Miller, Cole, Cooper, Maries, Morgan, Benton, Dallas, Jasper and several other counties, large discoveries are constantly being made.

Arizona.

The Prescott *Miner* of October 28, says:

Our prospectors and miners are again "red hot" over some rich discoveries that have been recently made in Groom's Basin, and on the divide between said Basin and Upper Lynx Creek. The fever is raging, and every citizen of this vicinity is more or less afflicted with it. We, ourself, have a peculiar desire to secure "feet" in some of the new and rich discoveries, but fear our desire will not be gratified, owing to the great greed of those who have rushed headlong, to gobble up everything of value. But, that is neither here nor there. A newspaper man has no right to expect anything, in this world, save hard work and abuse, but, Lord, won't we enjoy many a "fat take" in the next? These new mines, or, rather, the richest of them, have been named the "Bismark," "Cornucopia," and "Homestake." They are situate in the timber, about eight miles southeast from Prescott. Some people are of the opinion that the Home-stake and the Cornucopia are but two different locations upon the same lode. But with this we have nothing to do. It is our business, however, to state that the ledges are of respectable size, and immensely rich in silver. Indeed, we have heard of one assay yielding $6,000 to the ton, and this knowledge is good enough. The Bismark was discovered by Messrs. KELLY, ALEXANDER & SANFORD, who adore it for the bow of promise it contains for them. Mr. KELLY has worked, by simple mill process, 3 lbs. 10 ozs. of the rock, which yielded 5½ ozs. of pure silver! The Cornucopia is as rich, if not richer. But, it takes "Home-stake" rock to make a poor man's heart throb, and cause him to think of once again visiting the "old folks at home." Bless us, it is wonderfully and fearfully rich in cristallized horn silver, and silver in other forms. Break any piece of the ore, and upon every fracture you behold leaf chloride; thick bunches of chloride; native silver, sulphurets of silver, and silver in every conceivable shape! Oh! it is good to look upon, you wager, especially to those who own it, one of whom we are not. By working test, it has paid $1 25 per pound. In less than two hours after its discovery, about twenty claims were staked off along where claimants supposed it ran, for it is a "blind" ledge. Scores of men, upon hearing of its discovery, left town in great haste, with the view of securing claims upon it, and NOYES & CURTIS' mill hands left work at the mill and cannot yet be induced to waste their time fooling "mit the old saw-mill." NOYES & CURTIS are about as badly excited as their men, and talk of nothing but quartz, mills and arastras. And these are but a few of the small but rich silver ledges that have recently been found, and are yet to be found in this vicinity. Oh! how blind and foolish we and other old prospectors were in times past, to have looked for nothing, dreamed of nothing but rich gold rock! Now is the time, and this is the place, for some practical quartz man to erect reduction works.

The great "Tiger" lode, of Tiger District, Bradshaw mines, is still worshipped, and we are in good hope that the reduction works will, ere long, be up and going. At last accounts from the mine, the north drift was eighty feet, and, wide as the drift was, the pay-rock was still wider. But little was being done upon the Benton, Gray Eagle, Lorenna, Cougar and other rich gold and silver lodes of the district, for the reason that the people who own them have no means to sink upon them. Then, being well satisfied of their richness, they can afford to wait the erection of mills, or reduction works of some sort. JOHNY DOLAN was taking very rich gold rock out of the Louisiana lode. His arastra will soon be in operation.

IN PINE GROVE DISTRICT

the Del Pasco Company are building a trail. A recent run of their 5-stamp mill is said to have given great satisfaction. The company think they will realize over $1,000 gold, from about fifteen tons of Del Pasco ore.

WALNUT GROVE.

The test recently made at this place by SAM MAY, of Big Rebel and Unknown rock, did not yield as much as was expected. Upon first crushing Rebel rock, $100 to the ton was saved, and but $10 was gotten out of the tailings. The Unknown paid still more, and but $8 were found in the tailings. The Rebel is immense in size, and will average $25 to the ton.

IN WEAVER DISTRICT

are some fine ledges, but two of which are being worked. The great Sexton is acting very well, and a 10-stamp mill will soon be erected at some point near the ledge. Mr. BUNCKEN—one of the owners—has just bargained with NOYES & CURTIS, of this place, for the necessary lumber, and the machinery will soon be here. DAVIS & Co. are getting rich ore out of their lode.

WICKENBURG DISTRICT.

Mr. Sexton, Superintendent of the Vulture Mining Company, is doing as well as possible with mill and mine. The chances are that he will soon start in to build a narrow railroad from the mine to the mill, a distance of about fourteen miles. JOHN A. RUSH is looking around for a place to erect his little mill, which he expects very soon. Of late several sales of mining ground have been made. Placer miners are making fair wages, and praying for more water.

MOHAVE COUNTY.

Letters recently received from Wallapai District are filled with accounts of new and rich strikes. All the old ledges are reported as growing better the deeper they are opened. Much rich ore was being shipped to San Francisco; miners and capitalists were arriving from Nevada and California; houses were being erected; Indians were peaceable, and everything favorable for the achievement of success. We have no mining news to report from Yuma and Pima counties, and will close with the observation that, should the coming winter prove a wet one, Arizona will yield over $5,000,000 in gold and silver.

Alaska.

We are indebted to the San Francisco *Bulletin* for the following article on the

ALASKA COAL FIELDS.

Several months since the Bulletin published quite an elaborate account of the coal beds on one of the islands contiguous to the Alaska Peninsula. The account was drawn mainly from the official report of GENERAL THOMAS, who visited the islands, inspected the veins, and procured some samples of the coal.

Since the discovery was made, and the extent of the coal bed and its quality became known, active measures have been taken by enterprising citizens of San Francisco to open the mines and bring their products to this and other markets.

The Commissioner of the General Land Office, in his report respecting the coal deposits of Alaska, uses the following language:

"Prominent among the mineral deposits of Alaska are extensive beds of coal of excellent quality, generally bituminous, but often of the purest anthracite. These beds are found in many of the islands, and near the seacoast on the main land, in close proximity to excellent harbors, thus promising our commerce convenient and inexhaustable coaling deposits on the North Pacific, an advantage which is magnified in view of the unequaled fisheries and the importance of the fur trade of that great region. Considering the ease with which the coal will be conveyed from the mines to the harbors on the coast, it is probable that they will soon become an important article of export."

ALASKA COAL COMPANY.

This company was incorporated on the 21st of September last with a capital stock of $5,000,000. The veins which have been explored by the engineers of the Company are exposed in the face of a precipitous bluff 680 feet high, and immediately on the shore of the bay. The harbor is represented to be a very safe one, landlocked and easy of entrance. There are four principal veins of coal: the first, 20 feet above high water mark and 5 feet thick; the second 13 feet above the first and 6 feet thick; the third, 249 feet above the second and 4½ feet thick; and the fourth, 4 feet above the other and 9 feet in thickness. They are parallel one above the other and dip away to the mountains at an inclination of about 2 inches to the yard. The farther vein is about 800 feet from the point of shipment to the shore, and to that point the Company will construct a tramway. That and about 300 feet of wharf will enable them to deliver coal on shipboard. This work the Company propose to accomplish immediately.

QUALITY OF THE COAL.

The certificate of HENRY G. HUNKS, chemist, shows that the constituent parts of the coal are as follows: Spec. grav., 1,304; fixed carbon, 48.71; volatile matter, 25.79; water, 15.10;—2.40. Testimonials as to the superior quality of the coal are made by HORACE DAVIS, of the Golden Gate Mills, WM. HALL, foreman of the forge department of the Pacific Rolling Mill, J. V. CORNWELL, foreman of the mill, G. W. FOGG, Superintendent of Pacific Foundry, and by many prominent citizens who tested samples of the coal at their homes. One of these declares it to be equal to Sydney coal for iron working.

COST OF THE COAL.

The company claims that as soon as the works above mentioned can be completed, the coal can be mined and delivered in San Francisco at a cost of from $5 50 to $6 per ton, with transportation at the present rates. The value of accessible coal mines on this coast, producing a good quality of coal that can be economically handled and worked, cannot be over-estimated; especially a mine like this, producing a superior coal that will supply the place of many imported kinds. The large and constantly increasing consumption of coal on the Pacific coast, which will be greatly extended as our manufactures increase and the country becomes populous, will always keep a demand equal to the supply. The operations of this new company will be watched with great interest by all who are concerned in the procuring of good and cheap fuel for manufacturing and domestic purposes. They have determined not to levy assessments, but have set aside 10,000 shares of the capital stock to be sold for working capital.

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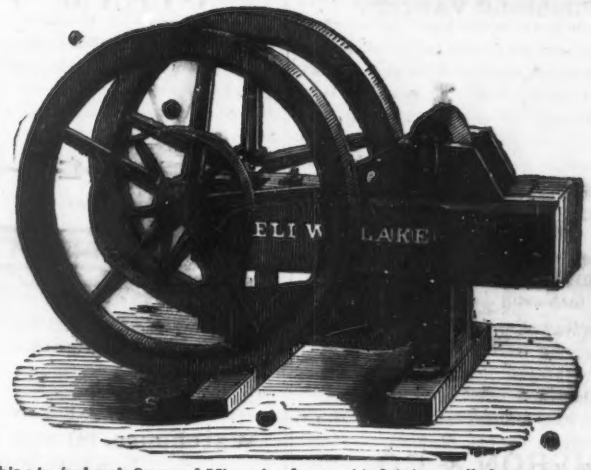
MISCELLANEOUS.

BLAKE'S STONE BREAKER.



The office of this Machine is to break Ores and Minerals of every kind into small fragments, preparatory to their furthe comminution by other machinery.

This machine has now been in use, enduring the severest tests, for the last ten years, during which time it has been introduced into almost every country on the globe, and is everywhere received with great and increasing favor as a labor-saving machine of the first order.

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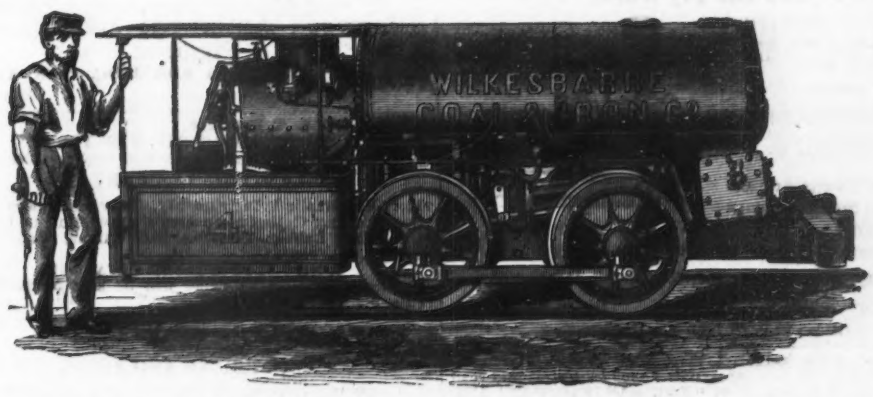

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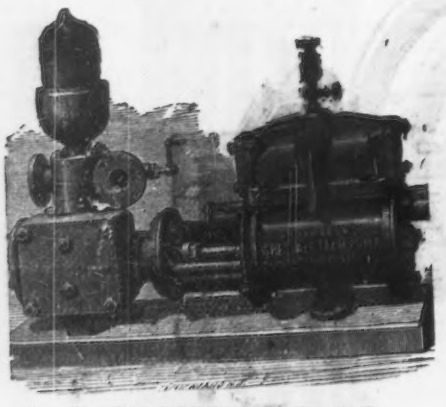

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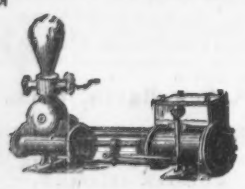

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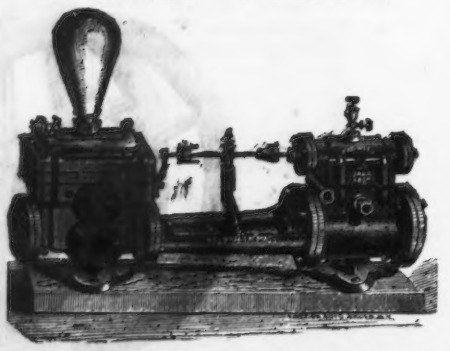

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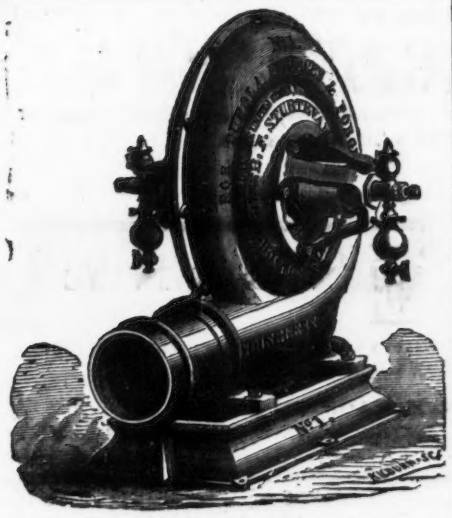

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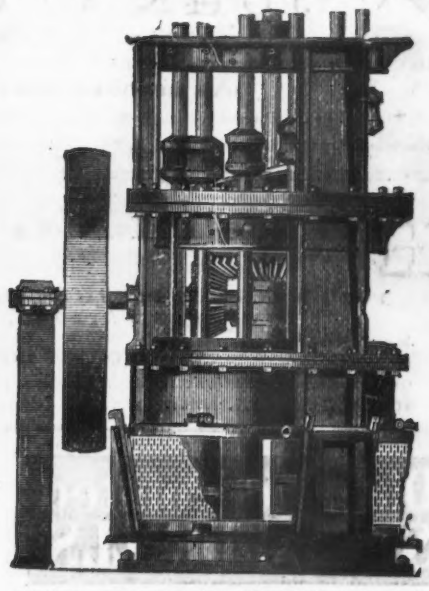

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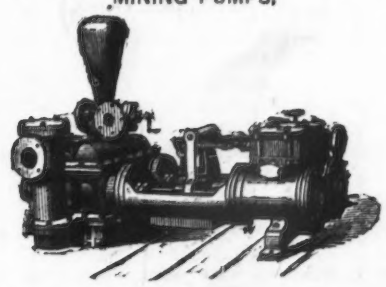

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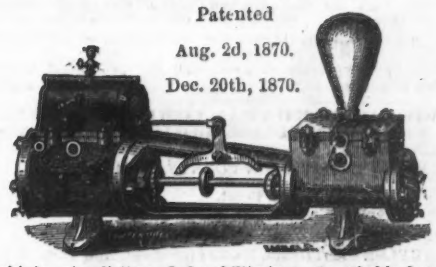

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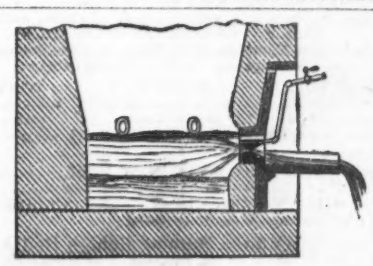

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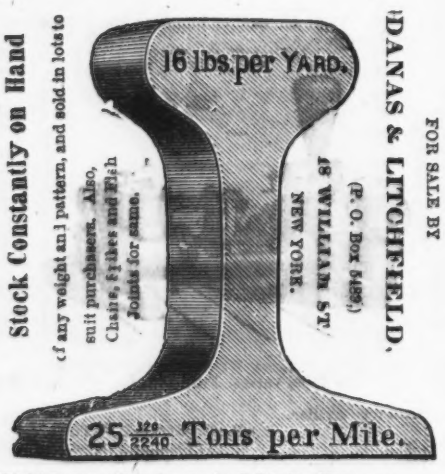
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